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INSTREAM WETLAND VEGETATION

REGROWTH STUDY

THIRD ANNUAL REPORT: RESULTS FOR 2000

Prepared in Accordance With

The California Regional Water Quality Control Board
San Francisco Bay Region
Order 98-088

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EXECUTIVE SUMMARY

This is the third in a series of four annual reports for the Santa Clara Valley Water District's (District) Instream Wetland Vegetation Regrowth Study (Study). This report has been prepared in accordance with California Regional Water Quality Control Board, San Francisco Bay Region (Board) Order 98-088.

The purpose of the Study is to better define the nature of wetland impacts resulting from the District's sediment removal projects in earthen flood control channels by studying vegetation reestablishment after excavation. The Study documents vegetation reestablishment on portions of 12 tidal and nontidal 1997 and 1998 sediment removal project sites (Excavation Sites), and monitors the wetland vegetation on other sites (Reference Sites) not currently subject to sediment removal. The Study assesses the amount and characteristics (vegetation dominance and quality) of wetland vegetation during the peak of the growing season prior to project implementation and for the next 3 years thereafter. This third year report presents results of third year postproject assessments for the 1997 Excavation Sites, second year postproject assessments of the 1998 Excavation Sites, and Reference Site Assessments.

Results to date indicate that total nontidal wetland amounts approached or surpassed preexcavation amounts within 1 to 2 years after excavation on both 1997 and 1998 sites. Overall tidal regrowth also was rapid on 1998 sites, with as much wetland vegetation present within 2 years after excavation as before excavation. On 1997 sites, however, total tidal regrowth remains lower than the preexcavation amount. The substantial regrowth amounts on the Excavation Study Sites indicates that instream wetlands can and do reestablish after sediment removal activities, but that regrowth on certain tidal sites can be substantially slower compared to other tidal sites and to all nontidal sites.

The third and final year evaluation of the 1997 Excavation Sites indicates substantial overall regrowth (97%) since excavation. With total nontidal regrowth at 124% and tidal regrowth at 64%, vegetation on many sites now equals or exceeds preproject amounts. Second postproject year evaluation of the 1998 Excavation Sites indicates even faster total regrowth rates and greater regrowth amounts than on the 1997 Sites, with total regrowth of almost 144%, nontidal regrowth of 182%, and tidal regrowth of 117%. All individual 1998 sites had regrowth of nearly or more than 100% by 2000 except the tidal Sunnyvale East (14%).

The total amount of wetland vegetation increased on Adjacent Reference sites and General Reference sites between 1999 and 2000. Over the entire study period, total vegetation amounts on tidal and nontidal Adjacent Reference sites have increased each year, resulting in current (2000) amounts exceeding the baseline amounts. On General reference sites, there was 1 year of declining vegetation on both nontidal and tidal sites, with increases in all other years. In 2000, total vegetation amounts were lower than the baseline amount on nontidal sites and higher than the baseline amount on tidal sites.

Vegetation dominance and quality (as represented by vegetation type, total percent cover of vegetation, and relative percent cover of native and invasive species) had similarities between years on both Excavation and Reference Sites. However, most sites did experience some changes over the course of the study in either dominance or quality. Most changes were either neutral or positive (e.g., full or partial transition from one native-dominated vegetation type to another; disappearance of a nonnative vegetation type; increased total percent cover). Potentially negative changes (e.g., increased invasive species cover; appearance or increase in amount of a nonnative vegetation type; decrease in total percent

cover) were fewer. This type of change was most notable on a 1998 Excavation Site (Berryessa Creek), where the increase in nonnative vegetation also corresponded with an increase in wetland amount.

For the most part, there was no clear differentiation in the tendency for changes in vegetation dominance or quality to occur in Excavation Sites as compared to Reference Sites. An exception is the overall reduction in Cattail amounts on nontidal sites immediately following excavation, with a subsequent increase in Cattail amount over time. Individually, some sites (such as the Morey Channels) still have less Cattail than prior to excavation while others have more (nontidal San Tomas upstream [u/s] Central Expressway). Although it was not a purpose of this Study to examine the effects of the District's vegetation management program on vegetation composition, we have seen indications of dominance shifts in vegetation from one type to another that may have resulted from this program.

A General Reference Site and 1998 Excavation Site were disturbed by sediment removal projects conducted after 2000 field surveys. Therefore, these sites (San Francisquito Creek downstream [d/s] Highway 101 and Sunnyvale East Channel) will be eliminated from future study.

Under the original study protocol, one more year of study (2001) is planned for the 1998 Excavation Sites. However, because the total regrowth on these sites already exceeds 100%, and the purpose of the Study "... to better define the nature of wetland impacts resulting from the District's sediment removal projects ..." has been fulfilled, we recommend that no further study be conducted, and this year 2000 report serve as the final report.

INTRODUCTION

BACKGROUND AND PURPOSE

The District maintains channelized streams (flood control channels) in Santa Clara County to ensure that they have a continuing functional life and provide the level of flood protection originally designed. Sediment removal, which removes both accumulated sediment and associated vegetation that reduces the ability of the channels to carry design flows, is a major component of the maintenance program and is the maintenance activity that most affects wetland resources in channels under District jurisdiction.

The purpose of the Study is to better define impacts to instream tidal and nontidal wetlands resulting from the District's sediment removal projects in flood control channels by increasing our understanding of the process of vegetation reestablishment after excavation. The major extent of instream wetlands in Santa Clara County occurs in flood control channels because there is little or no overstory to shade out wetland plants, and the relatively wide, level channel beds result in more wetted surface area. Channels with these types of features are also where the majority of sediment removal activity occurs and are the primary focus of this study.

The objectives of the Study are to determine the rate, extent, and vegetation characteristics of wetland vegetation reestablishment after sediment removal. The Study will document reestablishment characteristics on portions of selected 1997 and 1998 sediment removal project sites (Excavation Sites) and will also monitor the status of wetlands on study sites not currently subject to sediment removal (Reference Sites). Provisions of the study call for 3 years of postproject surveys. After 3 years, the need for further study is to be reassessed based on current needs and Study results. This year's surveys for the 1997 excavation sites represent the third year of postproject surveys. Therefore, this report contains an assessment of those sites in regard to the overall objectives of the Study.

The Study is designed to assess wetland regrowth at Excavation Sites during each of the next 3 years following excavation. Therefore, wetlands are assessed during the time of year when growth is expected to be at or near its peak (generally August through October in perennial and tidal streams, and early summer for intermittent streams). The Study incorporates information acquired from other studies conducted between 1995 and 1997, as well as information acquired specifically for the Study (see Rankin and Hillman 1998). This allows us to take advantage of an expanded range of applicable information obtained since sediment removal work first recommenced in 1997 after a several year interruption.

Clearly, wetland vegetation does reestablish in flood control channels previously cleared of sediment and vegetation due to facility construction and maintenance activities. However, prior to this Study, no comparative data on preproject and postproject wetland vegetation extent or characteristics were available. The Study represents a continuing evolution in our understanding of instream wetlands, District operations and maintenance, and long-term sampling procedures. District biologists will continue to refine Study protocols and other Study features, as needed, to improve overall effectiveness and work efficiency without compromising the project objectives.

This report describes the scope of the Study and presents the findings of the 2000 surveys as well as an evaluation of the findings of all years in comparison to study goals and objectives.

STUDY OVERVIEW

The Study involves field assessments of the extent and vegetation characteristics of instream wetlands in areas affected by the District's sediment removal activities.

- **Survey Content**: Surveys, conducted annually, will determine the extent of jurisdictional wetlands present, qualitatively characterize vegetation features, and photodocument site appearance.

- **Excavation Sites**: Selected 1997 and 1998 sediment removal project sites will be studied. The amount of wetland present on each site was determined prior to the start of each project. Preproject assessments of Excavation Sites will serve as a baseline for regrowth comparisons. Results of postexcavation surveys conducted annually for up to 3 years following the project will be compared to the baseline to determine recovery extent and characteristics.

- **Reference Sites**: Reference Sites are study sites that have not been impacted by sediment removal for at least 5 years. Reference Sites are located either near Excavation Sites (Adjacent Reference Sites) or at other locations within the District's projected long-term sediment removal work area (General Reference Sites). Reference Sites will be surveyed annually (unless impacted by sediment removal during the course of the study) and will provide background information on instream wetlands dynamics independent of sediment removal disturbance.

- **Report of Findings**: Wetland quantity and vegetation characteristics for each site will be reported annually. Current year site conditions will be compared with conditions of past years. Any trends in quantity and vegetation characteristics in project and reference sites will be discussed.

This is the third in a series of four annual reports to be submitted for this Study. Included in this report are:

- Third year postproject (2000) assessments for the 1997 project Excavation Sites
- Second year postproject assessments (2000) for the 1998 project Excavation Sites
- 2000 assessments for all Adjacent Reference Sites
- 2000 assessments for all General Reference Sites
- Final evaluation of third year postproject sites. Evaluation of second year postproject sites for determination of continued study efforts/direction.

The following were included in the first and second annual reports (Rankin and Hillman 1999, 2000):

- Preproject, first and second year postproject assessments for the 1997 project Excavation Sites
- Preproject and first year postproject assessments for the 1998 project Excavation Sites
- 1998 and 1999 assessments for all Adjacent Reference Sites, and prior year assessments for some sites
- 1997, 1998, and 1999 assessments for all nontidal and one tidal General Reference Site, and 1998 and 1999 assessments for all other tidal General Reference Sites

METHODS

Information for this Study was gathered from a variety of sources including studies conducted to assess instream wetlands on other District projects and from assessments conducted specifically for this study. Sources include Thomas Reid Associate (1995), H.T. Harvey and Associate (1997), individual maintenance project assessments conducted by District biologists and Ms. Kathy Lyons of Biotic Resources Group in 1997 and 1998, and surveys conducted by District biologists in 1997 to estimate the amount of wetlands in the District's proposed long-term maintenance program work area (see Rankin and Hillman 1999 for prior results and methods). Nineteen ninety-eight, 1999, and 2000 surveys were conducted specifically for the Study using the standard protocol described below.

STUDY SITES

The three types of study sites, Excavation, Adjacent Reference, and General Reference, are described below.

Excavation Sites

There are 12 Excavation Sites (Table 1, Figures 1 and 2) located on 4 of 5 1998 and 9 of 11 1997 earthen channel Sediment Removal Project sites (Note: Reported as 13 study sites in Rankin and Hillman 1999 because Berryessa u/s Lower Penitencia was excavated in both 1997 and 1998 [TRA 1995, TRA 1997, SCVWD 1998]). Nine of the Excavation Sites include the entire length of the corresponding Sediment Removal Project Site. These sites were studied in whole, because either the Sediment Removal Site was not very large or transitions in project or vegetation features were likely to occur on the site.

Three Excavation Sites, Lower Penitencia Creek, Saratoga Creek, and Sunnyvale East, consist of a portion (approximately 64%, 61%, and 67%, respectively) of each corresponding Sediment Removal Site. The features of the channel, project, and preproject vegetation on Saratoga and Lower Penitencia were homogeneous throughout each site. Therefore, subsampling the project area was sufficient to adequately assess features of the original project site, and the amount of each project area that could be captured on one aerial photograph was selected for study. Aerial photographs were taken and the study was planned to include the d/s reach of the Sunnyvale East sediment removal project; however, this segment was dropped from the project late in the planning process. Instead, the u/s segment of the remaining length of project site, Highway 237 to Carribean Drive, was selected for study (the small remaining segment d/s of this supported little wetland). In future study years, subsampling of other lengthy Study Sites may be instituted if interim study results indicate that there is little variability in amount or features of the recovering wetlands along the site length.

The Excavation Sites were defined the following way for projects on tidal sites, where sediment removal only affects one side of the channel. The Berryessa Creek u/s of Lower Penitencia and San Tomas Aquino u/s of Highway 237 Excavation Sites include the entire channel within the study reach. The Lower Penitencia Excavation Site includes the entire west channel (the east channel is the Adjacent Reference Site). San Tomas u/s of Great America and Sunnyvale East Excavation Sites consist only of that portion of the study reach that was actually excavated. For

Sunnyvale East, this comprises the entire east bank; with the west bank acting as the Adjacent Reference Site. For San Tomas, where excavation alternated from side to side several times, and often did not completely remove all of the vegetation on the excavated bank side, the Excavation Study site comprises alternating portions of both banks. All unexcavated areas of the reach, regardless of bank position, serve as the Adjacent Reference Site. The Excavation Site on San Tomas was determined by mapping the extent of excavation after the project in using field surveys, a January 1999 aerial photo and Geographic Information System (GIS). Areas not affected by excavation comprise the Adjacent Reference Site.

Preproject assessments were conducted for all 1997 and 1998 Excavation Sites prior to sediment removal. To date, first, second, and third year postproject assessments have been conducted for all 1997 Excavation Sites and first and second year postproject assessments have been conducted for all 1998 Excavation Sites. Data from the 1997 preproject assessments will be used as the baseline for postproject comparisons. Although the 1995 preproject assessment data will not be used for the baseline, the data was presented in the first annual Study report because it provides relevant information regarding past conditions, provides additional information on temporal variation in wetlands, and was the basis of project impacts assessments for environmental review and permitting documents (TRA 1995 and 1997).

Reference Sites

There are two types of reference sites. Adjacent Reference Sites are located near Excavation Sites, and General Reference Sites are situated at random locations within the District's projected long-term sediment removal program area (Tables 2 and 3, Figures 1 and 2).

Adjacent Reference Sites

Adjacent Reference Sites will be used to monitor wetland vegetation conditions in areas near Excavation Sites. These sites provide a point of reference from which to distinguish those features of the nearby reestablishing site that are directly related to the sediment removal impact and those that reflect variability related to other causes. For example, if flooding scours a streambed within an Excavation Site, it would likely scour the streambed in the Adjacent Reference Site. By comparing both sites, conditions resulting from flood scouring could be distinguished from conditions resulting from sediment removal.

Adjacent Reference Sites were selected to be as similar to Excavation Study Sites as possible. However, in most cases, areas adjacent to Excavation Study Sites differ in one or more features, such as channel configuration, width, length, vegetation abundance, or hydrology. No reference site is identical to an Excavation Site. For tidal Excavation Sites in which only one side of the channel was excavated (Lower Penitencia and Sunnyvale East), the opposite, unexcavated sides serve as the reference. In the case of San Tomas u/s of Great America, all unexcavated portions of the project reach regardless of bank serve as the reference (see Excavation Site section above). Suitable reference sites were not available in some cases because adjacent areas were too dissimilar from Excavation Sites or were proposed excavation sites. The location and approximate length of each Adjacent Reference Site is listed in Table 2. Adjacent Reference Sites were first surveyed in 1998, except Lower Penitencia, Jones, and South Morey Channel, which were also surveyed in prior years.

General Reference Sites

General Reference Sites will provide additional information regarding the general background condition and interannual variability of instream wetlands not recently impacted by sediment removal. Locating General Reference Sites within the District's projected long-term program sediment removal work area ensures that the channel reaches randomly selected for study have features likely to support instream wetlands (e.g., modified channels with relatively flat beds and little overstory vegetation).

General Reference Sites were randomly selected in the following way:

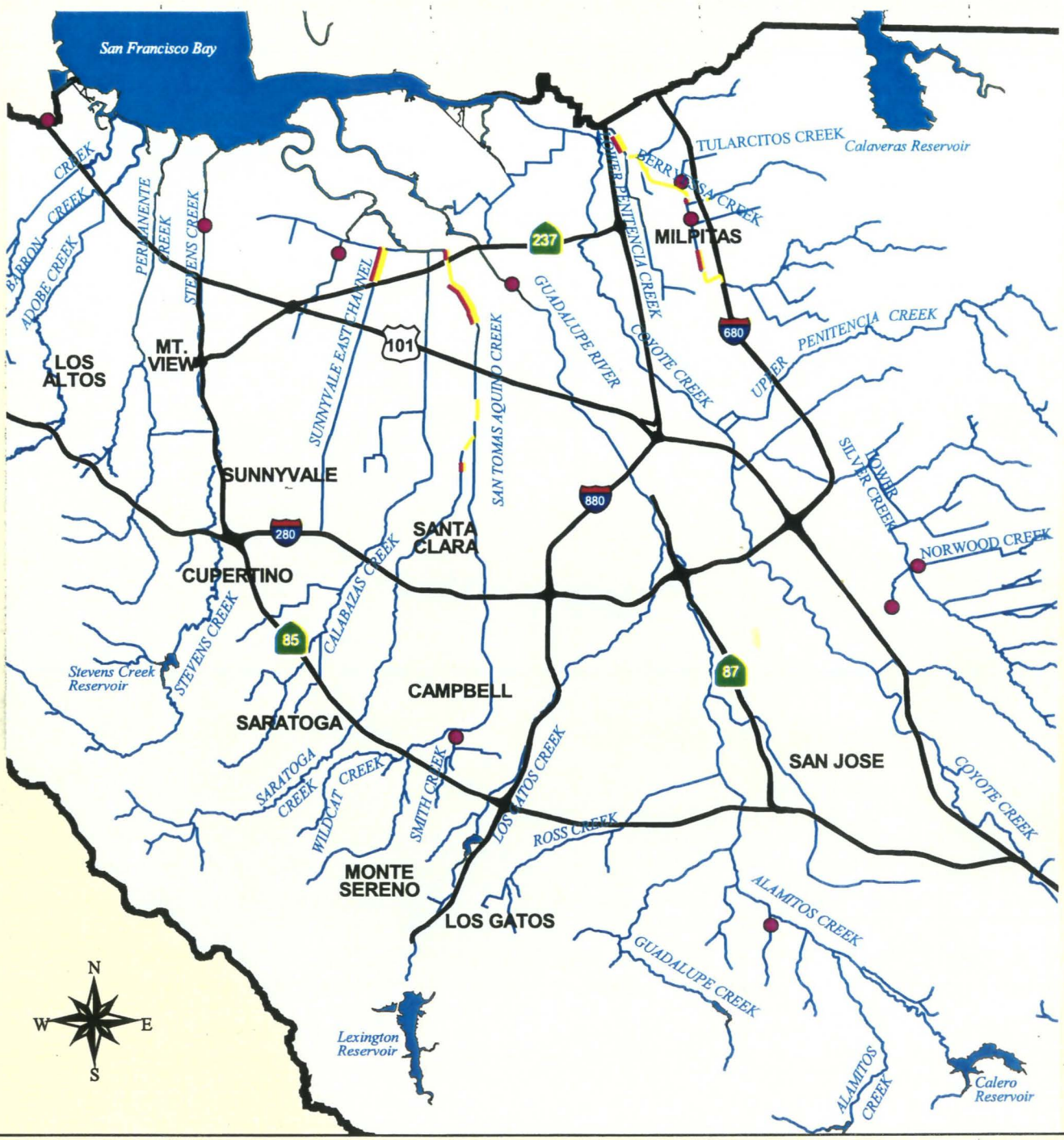
- All earthen channels with at least 1,000 linear feet of projected sediment excavation work area were considered for study. If the work area on a reach of stream ("work reach") had heterogeneous features (e.g., variable channel widths), it was segmented into homogeneous subreaches (e.g., having similar widths).

- Study sites are 10% samples, by length, of the total work reach or subreach. The location of the study site within the reach was selected randomly using the District's stream station identification numbers.

- The selected study site locations were identified by station number on a District facilities map, and then located in the field for surveying.

General Reference Sites could not be part of any area subject to or planned for sediment removal in 1997 or 1998 or part of an Adjacent Reference Site.

Ten nontidal General Reference Sites were randomly selected from approximately 50 sites meeting the study criteria (Table 3). The four tidal sites represent all proposed long-term maintenance program reaches meeting the study criteria. Nontidal sites were first sampled in 1997; tidal sites were sampled beginning in 1998. (Note: The Guadalupe River tidal site was first sampled in 1997 by H.T. Harvey and Associates [1997] as part of a survey for the Lower Guadalupe flood control project, H.T. Harvey 1997.)



Legend

Excavation Site

Adjacent Reference Site

General Reference Site

Figure 1.

Wetland Vegetation Regrowth

Study Site Locations: North County

Santa Clara Valley Water District

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Legend

Excavation Site

Adjacent Reference Site

General Reference Site

Figure 2.

Wetland Vegetation Regrowth

Study Site Locations: South County

Santa Clara Valley Water District

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TABLE 1
Excavation Sites

Stream	Location	Tidal	Nontidal	Approximate Length (ft.)
1997 Excavation Study Sites				
Berryessa Creek u/s Lower Penitencia	(same as 1998 site)	—	—	—
Jones Creek	d/s Highway 152	—	X	920
Lower Penitencia Creek	d/s Milmont Avenue	X	—	1,915
Los Coches Creek	d/s Park Victoria Drive	—	X	310
North Morey Channel	d/s Santa Teresa Boulevard	—	X	1,010
San Tomas Aquino Creek (tidal portion) u/s Highway 237	Highway 237 to Great America Parkway	X	—	2,500
San Tomas Aquino Creek (nontidal portion)	u/s Central Expressway	—	X	2,300
Saratoga Creek	u/s San Tomas Aquino confluence	—	X	2,000
South Morey Channel	d/s Santa Teresa Boulevard	—	X	830
1998 Excavation Study Sites				
Berryessa Creek u/s Lower Penitencia	Lower Penitencia Creek to Calaveras Boulevard	X	X	8,600
Berryessa Creek	u/s Montague Expressway	—	X	3,500
San Tomas Aquino (tidal portion) u/s Great America Parkway	Great America to u/s of Hetch Hetchy Pipeline crossing	X	—	5,300
Sunnyvale East Channel	d/s Highway 237	X	—	2,500
			TOTAL:	**31,685 ft., 6.0 mi.**

TABLE 2
Adjacent Reference Sites

Excavation Study Site	Corresponding Adjacent Reference Site	Approximate Length (ft.)
Berryessa Creek u/s Lower Penitencia Creek	Berryessa Creek d/s Los Coches Avenue	500
Jones Creek	Jones Creek d/s Excavation Study Site	920
Lower Penitencia Creek	Lower Penitencia parallel to Excavation Site (east channel)	1,915
Los Coches Creek	None	—
North Morey Channel	Lions Creek d/s Kern Avenue	1,000
South Morey Channel	South Morey d/s Excavation Site	830
San Tomas Aquino Creek (tidal portion) u/s Highway 237	San Tomas Aquino d/s Highway 237	700
San Tomas Aquino Creek (nontidal portion) u/s Central Expressway	None	—
Saratoga Creek u/s San Tomas Aquino Creek	Saratoga Creek u/s Warburton Avenue	1,020
Berryessa u/s Lower Penitencia	Same as Berryessa above	—
Berryessa u/s Montague Expressway (1998)	Berryessa d/s Montague Expressway	2,200
San Tomas Aquino (1998 tidal portion) u/s Great America Parkway	San Tomas Aquino parallel to Excavation Study Site	5,300
Sunnyvale East d/s Highway 237	Sunnyvale East Channel parallel to Excavation Study Site (west bank)	2,500
	TOTAL:	**16,895 ft., 3.2 mi.**

TABLE 3
General Reference Sites

Stream	Location (Station Number)	Approximate Length (ft.)
Nontidal Sites		
Berryessa Creek	109+85–112+00	215
East Little Llagas	45+00–47+20	220
Fisher Creek	149+00–150+00	100
Greystone Creek	11+00–13+10	210
Lower Silver Creek	373+95–375+00	105
Norwood Creek	7+80–11+00	320
Smith Creek	8+80–10+00	120
Tularcitos	9+00–12+80	380
West Little Llagas u/s of Cosmo Avenue	100+00–101+00	100
West Little Llagas d/s of Main Avenue	152+00–152+80	80
Tidal Sites		
Guadalupe River	318+00–325+50	750
San Francisquito	73+00–74+00	100
Stevens	90+00–92+20	220
Sunnyvale West	58+00–62+40	440
	TOTAL:	**2,920 ft., 0.6 mi.**

SITE ASSESSMENTS

Wetlands assessed in all years were identified based on criteria set forth in the Corps of Engineers (Corps) 1987 Wetland Delineation Manual (Environmental Laboratory 1987). Wetlands were identified based on three parameters as defined by the Corps: hydrophytic vegetation, hydric soils, and wetland hydrology. Potential wetlands were first identified based on site vegetation features. If the "prevalent vegetation consists of macrophytes that are typically adapted to areas having hydrologic and soil conditions" that occur in wetlands then the criterion for wetland vegetation was met. Hydrophytic species are classified as Obligate (OBL), Facultative Wet (FACW), and Facultative ([FAC] Reed 1988, Appendix A). If the vegetation criterion was met, the site was further investigated to determine the hydrology status. Positive wetland hydrology indicators for study sites most frequently consisted of visual observation of inundation and/or soil saturation. Other positive indicators included the presence of water marks, drift lines, waterborn sediment deposits, water-stained leaves, algal mats, and drainage patterns within wetlands. The soils of instream sites best fit the descriptions of either Riverwash or Tidal

Marsh soils (Soil Conservation Service 1968). These both are classified as hydric soils by the Soil Conservation Service (1992). In addition, soils in tidal and inundated areas were subject to an aquic or peraquic moisture regime. In order to assess wetland extent, all surveys since 1997 have been conducted late in the growing season (generally August through October for tidal and perennially wet streams; early summer for summer-dry streams). In 1995, several sites were surveyed early in the growing season. The late-season 1997 data, rather than the early-season 1995 data, will be used for comparison with postproject data. No update of 1995 data was available in 1997 for one 1997 Excavation Study Site, Berryessa u/s of Lower Penitencia.

Color 35mm or digital photographs were taken of each site during the field surveys. On sites that were repeatedly surveyed, photographs were taken, in most cases, from the same vantage point during successive surveys.

Year 2000 was a fairly average rainfall year, with mean seasonal rainfall in San Jose at 13.23 inches. This is approximately 94% of the historic seasonal average of 14.24 inches. This followed a drier-than-average year in 1999 (11.10 inches) and four previous wetter-than-average years (rainfall in San Jose in the 1997 to 1998 rainfall year, for example, was 29 inches, over double the historic mean).

Wetland vegetation reacts rapidly to changes in water availability, and amount and locations of wetlands are expected to vary depending on immediate past conditions. Jurisdictional wetlands, by definition, pertain to conditions found under "normal circumstances." In practice, features that have deviated due to "abnormal" circumstances can be difficult to identify, especially in the disturbed systems that are the focus of this study. However, in wetter than average cycles, assessment of wetland boundaries based on current conditions may lead to the overestimate of jurisdictional area, while in drier than normal years, assessments based on current conditions may lead to underestimation.

We have the unique opportunity in this Study to examine wetland dynamics through multiple years. Except for 1999, all Study assessment were conducted during high rainfall years. Year 2000 was the first "average" rainfall year in five, and perhaps the first year during which "normal circumstances" were present.

Vegetation Description

All 1998, 1999, and 2000 surveys were conducted using the standard protocol described below. The 1995 and some of the 1997 assessments were conducted prior to formalizing the vegetation characterization protocol (see Rankin and Hillman 1999 for pre-2000 assessment details).

Information sufficient to complete the SCVWD Wetland Assessment Checklists was gathered in the field (checklists presented in Appendices B, C, and D). Information included the determination of the Vegetation Dominance Type (Table 4) and Vegetation Quality Indicators (Table 5) of each wetland type.

The Vegetation Dominance Type categories represent vegetation dominance types typically found within local streams. The tall, native, grasslike perennial emergents that are typical dominants were collectively assigned a separate category for nontidal wetlands (e.g., Cattail, bulrush, burred, or mix), because these wetlands have a distinctive physiognomy. The grasslike emergents are further separated into species-specific categories (Alkali Bulrush, etc.) in tidal areas, because species may correlate with salinity gradients. The Other Natives category in tidal and nontidal

areas includes wetlands dominated by natives other than the typical tall, grasslike, emergents. Locally common dominants include watercress (*Rorippa nasturtium-aquaticum*), yellow water primrose (*Ludwigia peploides* spp. *peploides*), tall cyperus (*Cyperus eragrostis*), and a variety of smartweeds (*Polygonum* spp.)

Classification of vegetation characteristics first entailed viewing the site to become familiar with the wetland type or types on site. A wetland was considered to be one type if topographic position, dominance type, and quality indicators were fairly uniform. After creating a list of component species, the Vegetation Dominance Type and Vegetation Quality Indicators were estimated. On rare occasions, vegetation quality characteristics were so close to the edge of a category that its categorization was uncertain. In such cases, both categories were indicated for that particular feature.

Site assessments were conducted by botanists or wetland scientists experienced with vegetation sampling methods. Qualitative (semiquantitative) categorization of vegetation within broad, easily distinguished classes is a standard vegetation description procedure used in ecological studies (Bonham 1989, Mueller-Dombois 1975).

TABLE 4
Vegetation Dominance Types

Dominance (>50% Relative Cover)	
Tidal	**Nontidal**
a. Alkali bulrush	a. Bulrush, cattail, burred, or mix
b. California bulrush	b. Other native(s)
c. Cattail	c. Nonnative(s)
d. Cattail/bulrush mix	d. Other (describe)
e. Other native(s)	
f. Nonnative	
g. Other (describe)	

TABLE 5
Vegetation Quality Indicators

Vegetation Quality Indicators	Categories				
	A	B	C	D	E
Total percent cover	76–100%	51–75%	26–50%	11–25%	10% or less
Native species relative percent cover	76–100%	51–75%	26–50%	11–25%	10% or less
Invasive species relative percent cover	5% or less	6–25%	26–50%	51–75%	76–100%

Only those species considered to be aggressive invaders of local wetlands were designated as invasive species for the purposes of classification of vegetation quality. These were limited to broad-leaf peppergrass (*Lepidium latifolium*) and giant reed (*Arundo donax*). Numerous other nonnative, weedy species occur regularly in local wetlands, but based on current knowledge, these

are either naturalized, or not specifically known to encroach into already occupied habitat. Common examples included Italian ryegrass (*Lolium multiflorum*), cocklebur (*Xanthium strumarium*), bristly ox-tongue (*Picris echioides*), creeping bentgrass (*Agrostis stolonifera*), barnyard grass (*Echinochloa crus-galli*), dallis grass (*Paspalum dilatatum*), and Bermuda grass (*Cynodon dactylon*). All plant nomenclature is per the Jepson Manual (Hickman 1993).

Determination of Wetland Area

Wetland area, in all years, was determined using standard methods for wetland delineation including (1) field measurement; (2) delineation of boundaries, as determined in the field, onto transparent mylar sheets overlain on aerial photographs (scale 1″=50′); or (3) a combination of 1 and 2 (for prior measurement exceptions see Rankin and Hillman 1998).

Photographs were primarily used for mapping wetland boundaries on sites where the extent of the wetland was relatively large. Smaller sites had narrow channels or limited extent of wetland, such that wetland areas would not be easily visible on photographs at the 1″=50′ scale. These sites were, and will continue to be sampled solely by field measure: these include all General Reference Sites (except the Guadalupe River site), Berryessa Creek u/s Montague Expressway, Jones Creek, and North and South Morey Channels. Photographs for several fairly large sites were first available in 1999 for the Sunnyvale East Excavation and Adjacent Reference, San Tomas Aquino d/s of Highway 237 Adjacent Reference, and Saratoga Creek Adjacent Reference Sites. In prior years, wetland amounts here were determined by field measure.

Assessments conducted with aerial photographs taken prior to 1997 used blueline reproductions of rectified photographs. Acreage determinations were made either with AutoCad (computer aided design program) or by planimetry. With only two exceptions, since 1997, all photographs have and will continue to be taken in color. The photographs are taken in mid to late summer, during the growing season, and as close as possible to the time of field surveys. Photographs are taken near noon and during low tides (on tidal sites).

All aerial photos since 1997 were transferred into digital form for rectification and measurement. Aerial photograph diapositives were scanned into digital raster files. At least five photo-identifiable points in each photograph were surveyed with differentially corrected GPS, producing coordinates (California State Plane Coordinate System, Zone 3, North American Datum [N.A.D.] 83) used to rectify each photograph with Autodesk Imaging software. Photo-control points are expected to be within a 95% confidence ellipse of less than 3 feet from their actual location. The data were used to produce a geo-referenced image for use in ESRI's Arcview 3.1 GIS. Wetland boundary information from the mylar overlays, or delineated directly onto the electronic image, was digitized into the GIS.

Boundaries of excavation areas were directly digitized onto postproject digital aerial photographs (shots in winter of 1997 and 1998) in the GIS to determine the actual limits of excavation (and the actual amount of wetland removed) on the partially excavated tidal sites (1997 San Tomas [tidal] u/s Highway 237 and Lower Penitencia; 1998 Berryessa u/s of Lower Penitencia and San Tomas [tidal] u/s Great America Sites). Boundaries between excavated and unexcavated areas were easily distinguishable on photographs. For the 1998 San Tomas (tidal) u/s Great America Site, the delineated boundary of excavation also defines the Excavation Study Site. In 1999, using the GIS, the excavation area mapped in 1998 was superimposed upon the wetland area mapped in

1999 in order to determine the amount of wetland present within the Excavation Study Site. All wetland outside the excavation boundaries on the project reach is part of the Adjacent Reference Site. The same approach will be used to measure wetlands on the 1998 project San Tomas Aquino (tidal) Excavation and Adjacent Reference Sites in future years.

To ensure that precision of data comparisons was not overestimated, measurements on the larger Excavation Study and Adjacent Reference Sites are reported to the nearest 0.1 ac, rather than 0.01 ac. Calculations were conducted using measures to the nearest 0.01, and small discrepancies may result from rounding errors. Measurements on the smaller General Reference sites, which were consistently field-measured, will be reported in square feet (sq ft) and to the nearest 0.01 ac.

2000 Sampling Update

North and South Morey Channels Bridge Construction

The two bridges built on North and South Morey Channels in 1999 have permanently impacted sections of each channel for a length of 70 feet due to complete shading of the areas immediately under the bridges. The affected areas include the North Morey Excavation Study site and a small portion of both the South Morey Excavation and Adjacent Reference Sites (see Rankin and Hillman 2000 for a more complete description). These areas do not contain any wetland vegetation and it is not expected that vegetation will reestablish there. Thus, the reported acreages for these sites will be smaller and it is unlikely that the sites will ever reach 100% regrowth.

Berryessa u/s, d/s Montague Excavation and Adjacent Reference Sites

As in 1999, the Excavation and Reference sites on the nontidal section of Berryessa Creek were surveyed at different times of the year in order to capture the seasonal wetland characteristics for both ephemeral and perennial sections of the stream (for details see Rankin and Hillman 2000). The Excavation site was surveyed in June before the stream went dry, while the Reference site was surveyed in October, the typical sampling time for perennial streams. The summary and comparison tables in the Results section reflect these alternate sampling times. The comparison is still appropriate since each site was surveyed during the height of the growing season.

Future Assessments

According to study design, postproject Excavation Study Site surveys and Adjacent Reference Site surveys are to be conducted annually for 3 years after each project is completed (year 2000 for 1997 project sites and year 2001 for 1998 project sites) or until the next sediment removal activity occurs on an Excavation Site, if sooner. General Reference Site surveys will continue until all Excavation Site surveys are completed. If sediment removal occurs at an Adjacent or General Reference Site during the course of the Study, further study of the site may be discontinued.

This report evaluates study results to date, compares them to the original study objectives, and reevaluates the need to continue the Study through 2001.

RESULTS

1997 EXCAVATION SITES

Results of the third year postproject 2000 assessments for the 1997 project Excavation Sites are summarized in Table 6. Checklists and site photographs are located in Appendices B and E.

1997 Project Excavation Sites: Third Year Postproject Comparisons

Wetland Acreage: Comparison of the Present Year to the Preproject Baseline

A total of 8.4 acres of wetland was present within the 1997 Excavation sites in 2000 (Table 7). This is slightly lower than the 8.6 acres of preproject wetland present in 1997. Total wetland regrowth in 2000 was 97% (6.1 acres) compared to removal in 1997 (6.3 acres). Nontidal sites exhibited a 124% regrowth compared to 1997 removal, while tidal sites had 64% regrowth. For the tidal sites, this is an increase of 1.0 acres since 1999, when tidal regrowth was 29% compared to removal (see Rankin and Hillman 2000). Wetland acreage in 2000 on nontidal sites (4.3 acres) surpassed preproject wetland (3.5 acres), while on tidal sites there was 4.1 acres of wetland present in 2000 compared to 5.1 acres present in 1997 prior to sediment removal.

Three of the six nontidal sites exhibited over 100% regrowth: Los Coches (233%), San Tomas u/s Central Expressway (167%), and Saratoga Creeks (126%). The remaining nontidal sites showed a regrowth of at least 70% 3 years after sediment excavation (Table 7). On North Morey Channel, where some of the regrowing wetland was removed during bridge construction in 1999 (see Rankin and Hillman 2000), the amount of wetland in 2000 was the same as in 1998 prior to bridge construction (0.3 acres).

One of the two tidal 1997 Excavation sites, Lower Penitencia exhibited 100% regrowth 3 years after sediment excavation. San Tomas u/s of Highway 237 (tidal) regrowth was 46% (2.7 acres) compared to removal in 1997.

Vegetation Dominance and Quality: Comparison of the Present Year to Last Year

As in 1998 and 1999, Other Native vegetation was present on all six nontidal Excavation Sites. On three of the six sites, Cattails also comprised the dominant vegetation.

Three sites exhibited no change in vegetation dominance in 2000 compared to 1999 (Table 7).

On two of the three sites where vegetation dominance shifts did occur (Los Coches and Saratoga), Other Native vegetation became the sole vegetation on the site as the other types present in 1999 (Nonnative and Cattail, respectively) were no longer present in 2000. On the third site (San Tomas u/s Central Expressway), Cattails became dominant in 2000 in addition to Other Natives.

As in 1999, both tidal Excavation sites supported California Bulrush; however, there was a reduction in the amount of California Bulrush on San Tomas u/s Highway 237. Both sites also supported Other Natives, which increased between years on San Tomas Aquino and appeared for the first time in small amounts on Lower Penitencia.

Vegetation Quality Indicators remained unchanged from 1999 to 2000 on only two sites, both nontidal. Vegetation type units on three nontidal sites exhibited lower native species relative cover. One site had an increase in invasive species relative cover (Jones Creek; 6–25% category), and one site had a lower total percent cover (Los Coches). Both tidal Excavation sites experienced an increase in native species relative cover.

On all sites except Los Coches, total vegetative cover was in the highest category (76–100%: Table 6). Native species relative cover was in the highest or second highest category (76–100%, 51–75%) on all sites. Invasive species relative cover was in the lowest category (5% or less) on all sites except some vegetation on Jones and Lower Penitencia (6–25% relative cover of *Lepidium latifolium*).

North and South Morey Channels Bridge Construction Impacts

Bridge construction on North and South Morey Channels has impacted the wetlands there in different ways. On North Morey Channel, where the vegetation remains dominated by Other Natives, wetland has regrown up to the edges of the bridge and on the concrete aprons upstream and downstream of the bridge. Therefore, although 70 feet of the channel has been permanently impacted by the bridge due to complete shading, the remainder of the temporary construction impact area has already regrown.

On South Morey Channel, where the dominant vegetation type in the area impacted by the bridge was Cattail, regrowth has been slower. The 200 feet of wetland removed in 1999 during bridge construction has mostly not regrown. Seventy feet of the channel will be permanently shaded by the bridge; however, the 130 feet up and downstream of the bridge are also still devoid of vegetation except for a thin fringe along the banks.

Table 6. 1997 Project Excavation Sites: Summary of Third Year Postproject (2000) Assessments

Site	Month Surveyed	Survey Method[1]	Wetland Area [2,3] (acres)	Vegetation Dominance Type[4]	Vegetation Quality Indicators[5]
Berryessa u/s Lower Penitencia (see Table 8)					
Jones	Sep.	field	0.1	Cattail	AAA
			0.2	Other Native	ABB
		Site Total =	**0.3**		
Los Coches	Sep.	field/photo	0.1	Other Native	BBA
Lower Penitencia	Oct.	field/photo	1.3	t-California Bulrush	AAB
			0.1	t-Other Native	ABA
		Site Total =	**1.4**		
North Morey	Sep.	field	0.3	Other Native	ABA
San Tomas (tidal): u/s Hwy. 237 to G. America Pkwy	Sep.	field/photo	1.8	t-Other Native	ABA
			0.4	t-Other Native	AAA
			0.6	t-California Bulrush	AAA
		Site Total =	**2.7**		
San Tomas (nontidal): u/s Central Expressway to SPRR	Sep.	field/photo	0.9	Cattail	ABA
			1.0	Other Native	AAA
		Site Total =	**1.9**		
Saratoga	Sep.	field/photo	1.4	Other Native	ABA
South Morey	Sep.	field	0.2	Cattail	AAA
			0.2	Other Native	AAA
		Site Total =	**0.3**		

[1] Survey Method: field/photo = field surveys with photograph; field = field measures only; photo= photographic measures, not field-surveyed

[2] 0.0 indicates wetlands were present but < 0.05 acres

[3] Numerical discrepancies can be accounted for due to the rounding of values.

[4] See Table 4: Vegetation Dominance Type: t = tidal

[5] See Table 5: Vegetation Quality Indicators

[6] "Cattail" in the nontidal sites was the dominant species in the "Cattail, Bulrush, Burreed, or mix" category.

Table 7. 1997 Project Excavation Sites: Preproject (1997) and Third Year Postproject (2000) Comparisons

	WETLAND AREA (acres)[1]								
Site	1997	1998	1999	2000	Amount of Wetland Removed (1997)	Amount of Wetland Regrowth (2000)	Change From 1997 to 2000	2000 Regrowth Compared ot 1997 Removal (%)	Vegetation Dominance and Quality Status[3]
Nontidal									
Jones	0.4	0.2	0.3	0.3	0.4	0.3	-0.1	73	Remains dominated by Other Natives and Cattails (slightly less Cattails than in 1999); lower native species relative cover and greater invasive species relative cover in Other Natives type. Vegetation quality indicators unchanged in the Cattail type.
Los Coches[2]	0.0	0.1	0.1	0.1	0.0	0.1	0.0	233	Site now dominated by Other Natives only (no Nonnative vegetation type); lower total percent cover.
North Morey	0.4	0.3	0.2	0.3	0.4	0.3	-0.1	77	Remains dominated by Other Natives; slightly lower native species relative cover.
San Tomas u/s Central Expressway	1.2	0.4	1.3	1.9	1.2	1.9	0.8	167	Site now dominated by Cattails in addition to Other Natives; vegetation quality indicators of Other Natives unchanged.
Saratoga	1.1	1.1	1.2	1.4	1.1	1.4	0.3	126	Site now dominated only by Other Natives (no Cattails type); lower native species relative cover.
South Morey	0.4	0.3	0.3	0.3	0.3	0.3	-0.1	79	Fully-excavated portion remains dominated by Cattails and Other natives. Half-excavated portion remains dominated by Cattails. Vegetation quality indicators unchanged.
Nontidal subtotal	**3.5**	**2.3**	**3.4**	**4.3**	**3.4**	**4.3**	**0.8**	**124**	

Table 7. Continued.

	WETLAND AREA (acres)[1]								
Site	**1997**	**1998**	**1999**	**2000**	**Amount of Wetland Removed (1997)**	**Amount of Wetland Regrowth (2000)**	**Change From 1997 to 2000**	**2000 Regrowth Compared ot 1997 Removal (%)**	**Vegetation Dominance and Quality Status[3]**
Tidal									
Lower Penitencia	1.4	0.9	1.0	1.4	1.0	1.0	0.0	100	A small amount of Other Natives is now present in addition to Ca Bulrush. Higher native species relative cover in the Ca Bulrush type.
San Tomas u/s Highway 237	3.8	1.9	2.0	2.7	1.9	0.9	-1.0	46	Site remains occupied by Ca Bulrush and Other Natives, but there is less Bulrush. Other Natives now dominates the site. Vegetation quality indicators unchanged except for slightly higher cover of native species in portions of the Other Natives type.
Tidal subtotal	**5.1**	**2.8**	**3.1**	**4.1**	**2.9**	**1.8**	**-1.0**	**64**	
Total	**8.6**	**5.1**	**6.5**	**8.4**	**6.3**	**6.1**	**-0.2**	**97**	

[1] Numerical discrepancies can be accounted for due to the rounding of values.

[2] 0.0 indicates wetlands were present but < 0.05 acres

[3] "Cattails" in the nontidal sites were the dominant species in the "Cattail, Bulrush, Burreed, or mix" category.

1998 EXCAVATION SITES

The results of the second year postproject 2000 assessments for the 1998 project Excavation Sites are summarized in Table 8. Checklists and site photographs are located in Appendices B and F.

1998 Project Excavation Sites: Second Year Postproject Comparisons

Wetland Acreage: Comparison of the Present Year to the Baseline

Total wetland regrowth in 2000 for the 1998 Excavation sites was 144% (6.9 acres) compared to removal in 1998 (4.8 acres; Table 9). Nontidal regrowth was 182% compared to removal, while tidal regrowth was 117%. A total of 9.3 acres of wetland was present in 2000, compared to 7.2 acres in 1998 prior to sediment excavation. (Note: On Berryessa, all wetland in excess of that removed is considered regrowth.)

Both nontidal sites attained well over 100% regrowth in 1999 (see Rankin and Hillman 2000). In 2000, the nontidal portion of Berryessa u/s Lower Penitencia exhibited regrowth of 183%, while Berryessa u/s Montague Expressway exhibited regrowth of 140%. Of the 5.5 acres of nontidal wetland present in 2000, 3.7 acres comprised regrowth. The remainder was remnant vegetation.

The highest percentage of regrowth in 2000 was found on the tidal reach of Berryessa u/s Lower Penitencia (454%), while the lowest regrowth occurred on the tidal Sunnyvale East (14%). Of the 3.8 acres of tidal wetland present in 2000, 3.3 acres comprised regrowth.

Vegetation Dominance and Quality: Comparison of the Present Year to Last Year

Three of the five sites experienced some shift in vegetation dominance in 2000 (Table 9). On the nontidal section of Berryessa u/s Lower Penitencia, a small amount of Cattails has returned to the site in addition to the Other Native and Nonnative vegetation of last year. On tidal San Tomas u/s Great America Parkway, Other Native vegetation not present in 1999 now dominates the site, while California Bulrush and Nonnative Vegetation types have become more minor site components. And on nontidal Berryessa u/s Montague Expressway, Other Native vegetation is now dominant instead of Nonnatives.

Sites which did not experience a shift in vegetation dominance often did experience shifts in quantity or abundance of vegetation types. Two sites experienced a shift in vegetation quality: both tidal and nontidal Berryessa u/s Lower Penitencia had a higher relative cover of natives in 2000 than in the previous year. In contrast, Sunnyvale East experienced a decrease in relative cover of native species but had an increase in total vegetation cover.

On all sites, total vegetative cover was in the highest category (76–100%; Table 8). Native species relative cover ranged widely through all but the lowest category, while invasive species relative cover was consistently in the lowest category (5% or less).

Table 8. 1998 Project Excavation Sites: Summary of Second Year (2000) Post-Project Assessments

Site/Year	Month Surveyed	Survey Method[1]	Wetland Area (acres)[2]	Vegetation Dominance Type[3]	Vegetation Quality Indicators[4]
Berryessa L. Pen to Calaveras	Oct.	field/photo	0.9	t-Cattail	AAA
			0.1	t-Other Native	ABA
			0.8	t-Non-native	ACA
		Tidal Subtotal	**1.8**		
			1.8	Other Native	AAA
			0.4	Non-native	ACA
			1.8	Non-native	ADA
			1.0	Non-native	ACA
			0.5	Cattail	ABA
		Nontidal Subtotal	**5.5**		
		Site Total =	**7.2**		
Berryessa u/s Montague to Hwy 680	Jun.	field	0.1	Other Native	ABA
San Tomas (tidal) u/s Great America Pkwy	Aug.	field/photo	0.3	t-California Bulrush	ABA
			1.3	t-Other Native	ABA
			0.3	t-Non-native	ACA
		Site Total =	**1.9**		
Sunnyvale East	Sep.	field/photo	0.1	t-Other Native	ABA

[1] Survey Method: field/photo = field surveys with photograph; field = field measures only; photo= photographic measures, not field-surveyed.

[2] Numerical discrepancies can be accounted for due to the rounding of values.

[3] See Table 4: Vegetation Dominance Type: t = tidal

[4] See Table 5: Vegetation Quality Indicators

Table 9. 1998 Project Excavation Sites: Preproject (1998) and Second Year Postproject (2000) Comparisons

	WETLAND AREA (acres)[1,2]							
Site	1998	1999	2000	Amount of Wetland Removed (1998)	Amount of Wetland Regrowth (2000)	Change From 1998-2000	2000 Regrowth Compared to 1998 Removal (%)	Vegetation Dominance and Quality Status
Nontidal								
Berryessa u/s Lower Penitencia	3.8	4.5	5.5	2.0	3.6	1.6	183	Site now dominated by a small amount of Cattails in addition to Other Natives and Non-natives (similar to 1998). Some Non-native vegetation has higher relative cover of natives.
Berryessa u/s Montague Expressway	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.0**	**140**	Site now dominated by Other Natives instead of Non-natives.
Nontidal subtotal	**3.9**	**4.5**	**5.5**	**2.0**	**3.7**	**1.6**	**182**	
Tidal								
Berryessa u/s Lower Penitencia	0.8	1.3	1.8	0.3	1.3	1.0	454	Cattail and Non-native vegetation both increased and remain about equally dominant. Other Native vegetation remains a minor component and decreased slightly. Some Non-native vegetation with greater relative cover of natives.
San Tomas (tidal) u/s Great America Parkway	2.0	1.1	1.9	2.0	1.9	-0.1	96	Other Natives, not present in 1999, now dominates site. Ca Bulrush and Non-natives still present, but decreased. Vegetation quality indicators unchanged.
Sunnyvale East	0.5	0.0	0.1	0.5	0.1	-0.4	14	Remains dominated by Other Natives. Increase in total cover and decrease in relative cover of natives.
Tidal subtotal	**3.3**	**2.4**	**3.8**	**2.8**	**3.3**	**0.5**	**117**	
Total	**7.2**	**7.0**	**9.3**	**4.8**	**6.9**	**2.1**	**144**	

[1] Numerical discrepancies are due to the rounding of values.

[2] 0.0 indicates wetland present but at value less than 0.05.

ADJACENT REFERENCE SITES

The results of the 2000 assessments for the Adjacent Reference Sites are summarized in Table 10. Checklists and site photographs are located in Appendices C, E, and F.

Adjacent Reference Sites: Comparisons for 2000

1997 Project Adjacent Reference Sites

Wetland Acreage

Total wetland present in the six 1997 Adjacent Reference sites in 2000 was 5.8 acres (Table 11). This is an increase of 0.6 acres (111%) since 1999 and 1.3 acres (129%) since 1998. Nontidal and tidal wetland amounts in 2000 were 112% and 111% of 1999 values and 125% and 131% of 1998 values, respectively. Individual wetland amounts either remained the same or increased on all sites in both years.

Vegetation Dominance and Quality

There were no shifts in vegetation dominance types present on any sites. However, the amount of Cattails compared to Other Natives increased from 1999 to 2000 for Jones Creek (Table 11). All nontidal sites were dominated by either Cattails, Other Natives, or a combination of the two vegetation types. Lower Penitencia was the one site dominated as in past years by California bulrush, while the tidal San Tomas d/s Highway 237 remained dominated by Cattail and Other Native vegetation.

Vegetation quality indicators remained unchanged on four of the six sites. Vegetation on South Morey was characterized by a lower total percent cover of vegetation in 2000, while San Tomas d/s Highway 237 exhibited a decrease in the relative cover of natives.

On all sites except one (South Morey), total vegetative cover was in the highest category (76–100%; Table 10). Native species relative cover was high on all sites (within the 76–100% or 51–75% cover category), while invasive species relative cover was in the lowest category (5% or less) on all sites.

1998 Project Adjacent Reference Sites

Wetland Acreage

Total wetland present in the four 1998 Adjacent Reference sites in 2000 was 3.2 acres (Table 12). This is an increase of 0.7 acres (130%) since 1999 and 1.5 acres (186%) since 1998. Nontidal and tidal wetland amounts in 2000 were 85% and 142% of 1999 values and 300% and 175% of 1998 values, respectively. Individual wetland amounts either remained the same or increased on all sites except one. Berryessa d/s Montague Expressway experienced a decline of 0.1 acres from 1999 to 2000.

Table 10. Adjacent Reference Sites: Summary of 2000 Assessments

Site	Month Surveyed	Survey Method[1]	Wetland Area [2] (acres)	Vegetation Dominance Type[3]	Vegetation Quality Indicators[4]
Nontidal					
Berryessa d/s Los Coches Avenue	Oct.	field/photo	0.0	Other Native	ABA
			0.1	Other Native	AAA
		Site Total =	**0.2**		
Berryessa d/s Montague Expwy.	Oct.	field	0.3	Other Native	AAA
Jones	Sep.	field	0.1	Cattail	AAA
			0.1	Other Native	AAA
		Site Total =	**0.3**		
Lions (North Morey reference site)	Sep.	field	0.6	Cattail	AAA
Saratoga	Sep.	field/photo	0.7	Other Native	AAA
South Morey	Sep.	field	0.4	Cattail	BAA
Nontidal subtotal			**2.4**		
Tidal					
Lower Penitencia	Oct.	field/photo	2.1	t-California Bulrush	AAA
San Tomas (tidal) d/s Highway 237	Sep.	field/photo	1.5	t-Cattail	AAA
			0.3	t-Other Native	ABA
		Site Total =	**1.7**		
San Tomas (tidal) u/s of Great America Parkway	Aug.	field/photo	0.4	t- California Bulrush	ABA
			1.6	t-Other Native	ABA
			0.0	t-Non-Native	ACA
			0.2	t-Non-native	ACB
		Site Total =	**2.2**		
Sunnyvale East	Sep.	field/photo	0.6	t-Other Native	AAA
Tidal subtotal			**6.6**		
Total			**9.0**		

[1] Survey Method: field/photo = field surveys with photograph; field = field measures only

[2] Numerical discrepancies can be accounted for due to the rounding of values.

[3] Vegetation Dominance Type: t = tidal

[4] See Table 5: Vegetation Quality Indicators

[5] "Cattail" in the nontidal sites was the dominant species in the "Cattail, Bulrush, Burreed, or mix" category.

Table 11. 1997 Project Adjacent Reference Site Comparisons for 2000

Site	Wetland Area (acres)				Change from '98 to '00 (ac)	Change from '99 to '00	2000 Wetland compared to 1998 (%)	2000 Wetland compared to 1999 (%)	Vegetation Dominance and Quality Status
	1997[1]	1998	1999	2000					
Nontidal									
Jones	0.3	0.3	0.3	0.3	0.0	0.0	104	104	Cattails and Other Natives present, but now Cattail rather than Other Natives is more abundant. Vegetation quality indicators unchanged.
Lions (North Morey reference site)	---	0.4	0.6	0.6	0.1	0.0	125	100	Remains dominated by Cattails. Vegetation Quality Indicators unchanged.
Saratoga	---	0.5	0.6	0.7	0.3	0.2	151	125	Remains dominated by Other Natives. Vegetation quality indicators unchanged.
South Morey	0.3	0.3	0.3	0.4	0.0	0.0	106	113	Remains dominated by Cattails. Lower total percent cover.
Nontidal Subtotal	---	**1.5**	**1.7**	**1.9**	**0.4**	**0.2**	**125**	**112**	
Tidal									
Lower Penitencia	1.8	1.5	2.1	2.1	0.6	0.0	136	102	Remains dominated by Ca Bulrush. Vegetation quality indicators unchanged.
San Tomas (tidal) d/s Highway 237	---	1.4	1.4	1.7	0.4	0.3	125	124	Remains dominated by Cattails and Other Natives. Decrease in relative cover of natives in Other Natives category.
Tidal Subtotal	---	**2.9**	**3.5**	**3.8**	**0.9**	**0.4**	**131**	**111**	
Total	---	**4.5**	**5.2**	**5.8**	**1.3**	**0.6**	**129**	**111**	

[1]Several sites were not surveyed until 1998.

Table 12. 1998 Project Adjacent Reference Site Comparisons for 2000

Site	Wetland Area (acres)			Change from '98-'00 (ac)	Change from '99-'00 (ac)	2000 Wetland compared to 1998 (%)	2000 Wetland compared to 1999 (%)	Vegetation Dominance and Quality Status
	1998	1999	2000					
Nontidal								
Berryessa d/s Los Coches Avenue	0.1	0.2	0.2	0.1	0.0	189	106	The Non-native vegetation of 1999 transitioned back to Other Natives in 2000, as in 1998. Other Natives category of last year still present. Vegetation Quality Indicators unchanged.
Berryessa d/s Montague Expressway	0.1	0.4	0.3	0.2	-0.1	467	76	Remains dominated by Other Natives; increase in relative cover of natives.
Nontidal Subtotal	**0.2**	**0.5**	**0.5**	**0.3**	**-0.1**	**300**	**85**	
Tidal								
San Tomas (tidal) u/s of Great America Parkway	1.3	1.6	2.2	0.9	0.6	165	134	Site now dominated by Non-natives and Other Natives in addition to Ca Bulrush. Decrease in Ca Bulrush. Vegetation quality indicators unchanged.
Sunnyvale East	0.3	0.4	0.6	0.3	0.3	217	175	Remains dominated by Other Natives; increase in total cover and relative cover of natives.
Tidal Subtotal	**1.6**	**2.0**	**2.8**	**1.2**	**0.8**	**175**	**142**	
Total	**1.7**	**2.5**	**3.2**	**1.5**	**0.7**	**186**	**130**	

Vegetation Dominance and Quality

Two of the four 1998 Adjacent Reference sites experienced a change in vegetation dominance (Table 12). On Berryessa d/s Los Coches Avenue, Nonnative vegetation transitioned back to the Other Natives present in 1998. On San Tomas u/s Great America Parkway, Nonnatives and Other Native vegetation dominated the site in 2000 in addition to California Bulrush, which decreased in abundance as a vegetation type.

Two sites experienced a change in vegetation quality. Berryessa d/s Montague Expressway and Sunnyvale East both had an increase in the relative cover of native species, while Sunnyvale East increased in total vegetative cover as well.

All sites had total vegetative cover values in the highest category (76–100%; Table 10). Native species relative cover was variable, but mostly within the higher or highest cover categories (51–75%, 76–100%). Invasive species relative cover was in the lowest category for all sites (5% or less) except for one section of San Tomas Aquino u/s Great America Parkway (6–25% cover of *Lepidium latifolium*).

GENERAL REFERENCE SITES

The results of the 2000 assessments for the General Reference Sites are summarized in Table 13. Checklists and site photographs are located in Appendices D and G.

Wetland Acreage

Total wetland present in all General Reference sites in 2000 was 167, 447 sq ft (3.84 acres; Table 14). Wetland area in 2000 was 117% of that present in 1999. Nontidal and tidal amounts were 107% (14,809 sq ft, or 0.34 acre) and 118% (152, 638 sq ft, or 3.5 acres) of 1999 values, respectively (Table 14). The greater increase in tidal wetland as compared to nontidal wetland (as percentage of 1999 values) follows the trend seen in the Adjacent Reference Sites.

From 1999 to 2000, four nontidal sites had no change in wetland area, four sites had an increase in wetland area, and two sites exhibited a decrease in area (Table 14). Of the sites with no change in wetland area, two sites continued to remain dry with no wetland in the channel (East Little Llagas and West Little Llagas u/s Cosmo Avenue), and two sites were completely vegetated to capacity (Tularcitos and West Little Llagas d/s Main Avenue).

In contrast, all four tidal sites experienced an increase in wetland area from 1999 to 2000. The largest increases occurred on San Francisquito and Stevens Creeks, where wetland areas in 2000 were 479% and 495% of 1999 values. For San Francisquito, the Other Native vegetation type present in 1999 became more diverse as a new dominant species accounted for a majority of the wetland area in 2000 (Table 13). On Stevens Creek, the increase in wetland area was accompanied by a type conversion from Other Native to Nonnative vegetation and an increase in the invasive species relative cover (Table 14).

Table 13. General Reference Sites: Summary of 2000 Assessments

Site	Month Surveyed[1]	Wetland Area (sq ft)	Wetland Area (acres)[2]	Vegetation Dominance Type[3]	Vegetation Quality Indicators[4]
Non-tidal					
Berryessa u/s Los Coches Avenue	Oct.	1505	0.03	other native	ABA
East Little Llagas	Sep.	0	0	---	---
Fisher	Sep.	2140	0.05	other native	AAA
Greystone	Oct.	211	0.01	other native	BBA
Lower Silver	Oct.	1401	0.03	cattail	AAA
Norwood	Oct.	930	0.02	other native	ABA
Smith	Oct.	442	0.01	non-native	ACA
Tularcitos	Oct.	2052	0.05	other native	AAA
		5168	0.12	cattail	AAA
Site total		7220	0.17		
West Little Llagas u/s Cosmo Avenue	Sep.	0	0	---	---
West Little Llagas d/s Main Avenue	Sep.	960	0.02	cattail	AAA
Non-tidal Total		14809	0.34		
Tidal					
Guadalupe River	Oct.	111,514	2.56	other native	ABA
		29,621	0.68	California bulrush	AAA
Site total		141,135	3.24		
San Francisquito	Sep.	952	0.02	other native	ABB
		3500	0.08	other native	AAA
Site total		4452	0.1		
Stevens	Aug.	371	0.01	non-native	ACB
Sunnyvale West	Nov.	6680	0.15	other native	ABA
Tidal Total		152,638	3.50		
Total		167,447	3.84		

[1] All surveys were field measured except Guadalupe which used aerial photo

[2] Numerical discrepancies can be accounted for due to the rounding of values.

[3] Vegetation Dominance Type t = tidal

[4] See Table 5: Vegetation Quality Indicators

[5] "Cattail" in the nontidal sites was the dominant species in the "Cattail, Bulrush, Burreed, or mix" category.

Table 14. General Reference Sites: Comparisons for 2000

	Wetland Area (sq. ft.)				Change From	Wetland Area (%)	Acreage Change Direction		
Site	1997	1998	1999	2000	1999-2000	2000 compared to 1999	1999-2000	Change in Vegetation Dominance Status	Vegetation Quality Changes
Non-tidal									
Berryessa u/s Los Coches Avenue	2365	789	1502	1505	3	100	+	none	CBA to ABA
East Little Llagas	0	0	0	0	0	0	=	---	---
Fisher	1300	1300	1300	2140	840	165	+	Cattail to Other Native	none
Greystone	44	965	425	211	-214	50	-	none	CBA to BBA
Lower Silver	720	1575	1680	1401	-279	83	-	none	ABA to AAA
Norwood	5304	0	440	930	490	211	+	none	none
Smith	0	360	333	442	109	133	+	none	none
Tularcitos	7980	6750	7220	7220	0	100	=	Other Native to Other Native and Cattail	none
West Little Llagas u/s Cosmo Avenue	100	447	0	0	0	0	=	none	none
West Little Llagas d/s Main Avenue	960	960	960	960	0	100	=	none	none
Nontidal Total	**18773**	**13146**	**13860**	**14809**	**949**	**107**	+		

Table 14. Continued.

	Wetland Area (sq. ft.)				Change From	Wetland Area (%)	Acreage Change Direction		
Site	1997	1998	1999	2000	1999-2000	2000 compared to 1999	1999-2000	Change in Vegetation Dominance Status	Vegetation Quality Changes
Tidal									
Guadalupe River[3]	138,956	138,956	124,582	141,135	16,553	113	+	Cattail/bulrush mix and Other Native to Ca Bulrush and Other Native	AAA and BBB to AAA and ABA
San Francisquito	no data	1040	930	4452	3522	479	+	none	AAA to AAA and ABB
Stevens	no data	650	75	371	296	495	+	Other Native to Nonnative	ABA to ACB
Sunnyvale West	no data	3520	3598	6680	3082	186	+	none	CBA to ABA
Tidal Total[4]	--	**144,166**	**129,185**	**152,638**	**23,453**	**118**	+		
Grand Total[4]	--	**157,312**	**143,045**	**167,447**	**24,402**	**117**	+		

[1] See Table 5: Vegetation Quality Indicators

[2] "Cattails" in the nontidal sites were the dominant species in the "Cattail, Bulrush, Burreed, or mix" category.

[3] 1997 and 1998 Guadalupe mapped wetland were re-measured with plainimitry and corrected values presented in 1999.

[4] Data totals not presented for tidal area in 1997 due to incomplete data set. Several areas were not surveyed until 1998.

As in past years, the Guadalupe River site was by far the largest with almost 80% of the total General References Sites' wetland acreage. After a decrease from 1998 to 1999, wetland area in 2000 was 113% of that present in 1999 (Table 14).

Vegetation Dominance and Quality: Comparison of the Present Year to Last Year

There were changes in vegetation dominance and/or quality on 9 of the 14 sites. For the nontidal general reference sites, two sites exhibited a change in vegetation dominance (Fisher and Tularcitos Creeks). Three sites experienced a change in vegetation quality, which consisted of an increase in total vegetative cover (Berryessa u/s Los Coches, Greystone Creeks) or native species relative cover (Lower Silver).

On the tidal sites, two of the four experienced some change in vegetation dominance, while all four sites had a shift in vegetation quality. These shifts ranged from an increase in total vegetative cover, such as on Sunnyvale West and Guadalupe River, to a decrease in native species relative cover and increase in invasive species relative cover (one vegetation type on Stevens Creek). On Guadalupe River, there was a decrease in invasive species relative cover.

All sites had total vegetative cover in either the highest category (76–100% cover) or the second-highest category (51–75% cover). Native species relative cover was typically in the same two highest categories, while invasive species relative cover was in the lowest category (5% or less) on all sites except San Francisquito and Stevens (6–25%).

SUMMARY FINDINGS

1997 Project Excavation Sites: Third Year Postproject Regrowth

Year 2000 represents the third and final year for evaluation of wetland regrowth on the 1997 Project Excavation Sites. Since vegetation removal in 1997, there has been a progressive increase in wetland regrowth in tidal and nontidal areas (Figure 3, Table 15). For nontidal sites, the greatest increase was between 1998 (2.2 acres of wetland regrowth) and 1999 (3.4 acres). One and two years after removal, nontidal sites collectively supported 65% and 98% of the amount of wetland removed in 1997. By 2000, the amount of wetland regrowth in nontidal sites (124%) surpassed removal, although not all individual sites exhibited regrowth of 100% or greater.

Half of the six individual nontidal sites had well over 100% regrowth by 2000. The other three sites, all in South County, had over 70% regrowth on each site.

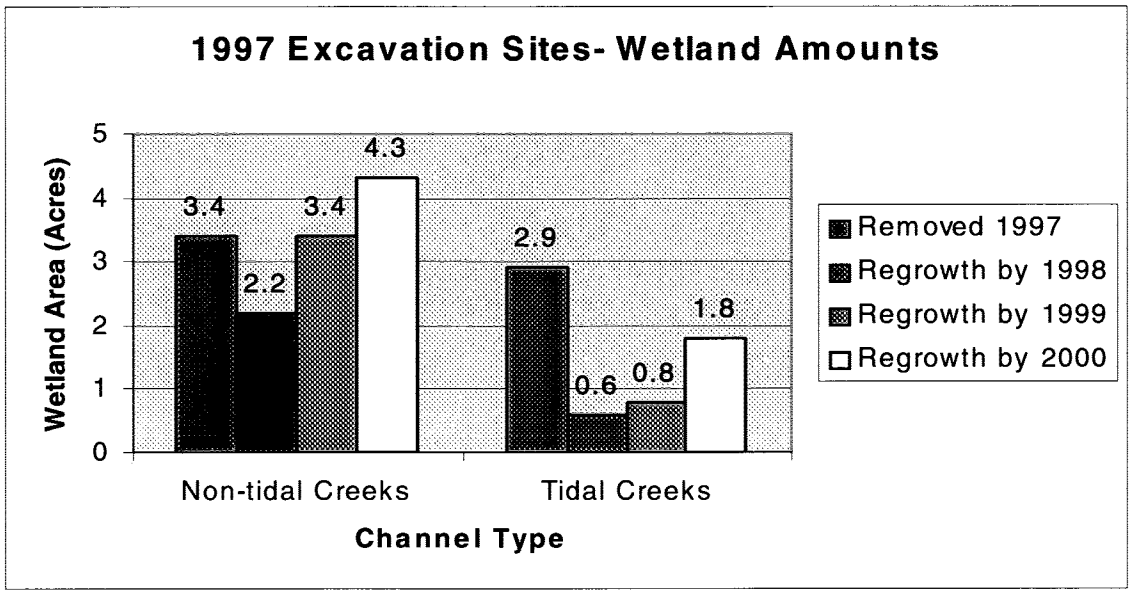

Figure 3. Wetland regrowth through 2000 in tidal and nontidal creeks after sediment excavation in 1997.

Table 15: Summary of 1997-00 Wetland Vegetation Regrowth Acreage Results

	2000 Regrowth (ac)	Regrowth Compared to Removal (%)			2000 Amount (ac)	1998 to 1997 (%)	1999 to 1998 (%)	2000 to 1997 (%)	2000 to 1998 (%)	2000 to 1999 (%)
		1998	1999	2000						
1997 Excavation										
Nontidal	3.9	65	98	124						
Tidal	1.8	21	29	64						
Total	**4.2**	**45**	**67**	**97**						
1998 Excavation										
Nontidal	3.7	N/A	133	182						
Tidal	3.3	N/A	69	117						
Total	**7.0**	**N/A**	**96**	**144**						
1997 Adjacent Reference										
Nontidal					1.9	N/A	112	N/A	125	125
Tidal					3.8	N/A	118	N/A	131	111
Total					**5.7**	**N/A**	**116**	**N/A**	**129**	**111**
1998 Adjacent Reference										
Nontidal					0.5	N/A	353	N/A	300	85
Tidal					2.8	N/A	123	N/A	175	142
Total					**3.3**	**N/A**	**143**	**N/A**	**186**	**130**
General Reference										
Nontidal					0.3	70.0	105	79	113	107
Tidal					3.5	N/A	90	N/A	106	118
Total					**3.8**	**N/A**	**91**	**N/A**	**106**	**117**

Tidal reaches exhibited a slower rate of regrowth than nontidal sites. By 2000, tidal sites had regrown 64% since wetland removal in 1997. Year 2000 showed a substantial increase from 1999, when tidal regrowth was 29%. The greatest amount of wetland vegetation regrowth occurred between 1999 (0.8 acres) and 2000 (1.8 acres), 1 year later than for nontidal sites.

On one of the two tidal sites (Lower Penitencia), vegetation completely regrew by postproject year 3, while the other site (San Tomas Aquino u/s of Highway 237) had only 46% regrowth by year 2000. Wetland on San Tomas Aquino increased by 0.7 ac from 1999 to 2000, representing the largest annual increase in vegetation on this site which has been slowest 1997 site to recover (Figure 4). As was postulated last year, it is possible that sedimentation, required to support marsh vegetation, has been slow to occur in the wide San Tomas Aquino channel. In contrast, the narrow western side channel of the Lower Penitencia site is completely vegetated (Figure 5).

Figure 4A. Pre-Project Excavation Area.
Photo Date: August 1997.

Figure 4B. Post-Project Excavation Area.
Photo Date: December 1997.

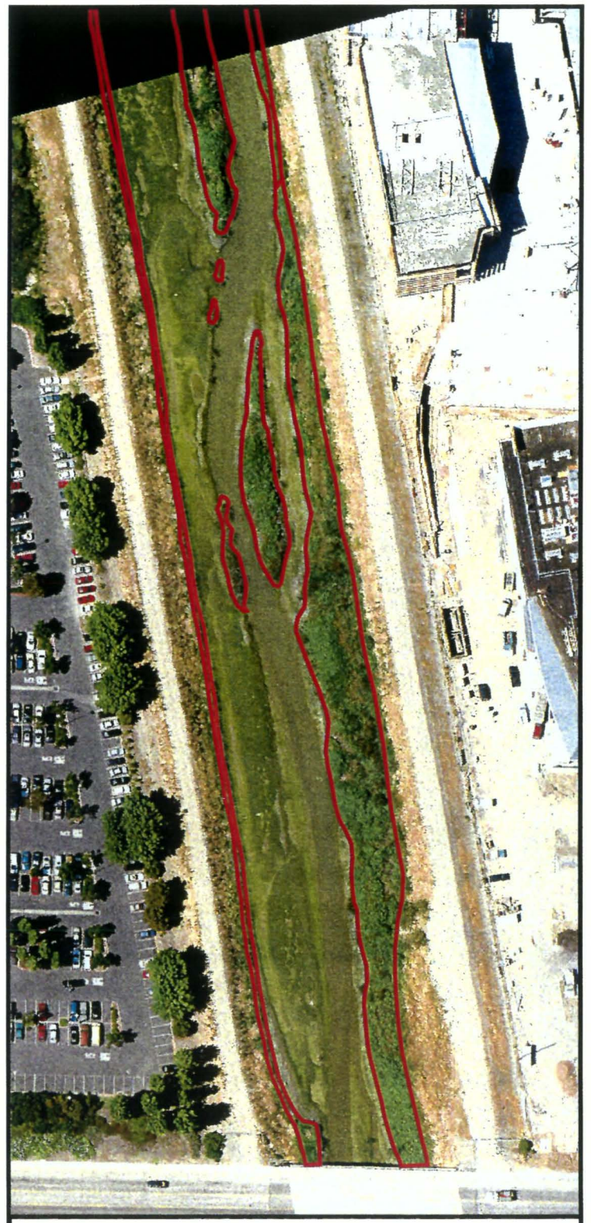

Figure 4C. First Year Post-Project Wetlands.
Photo Date: July 1998.

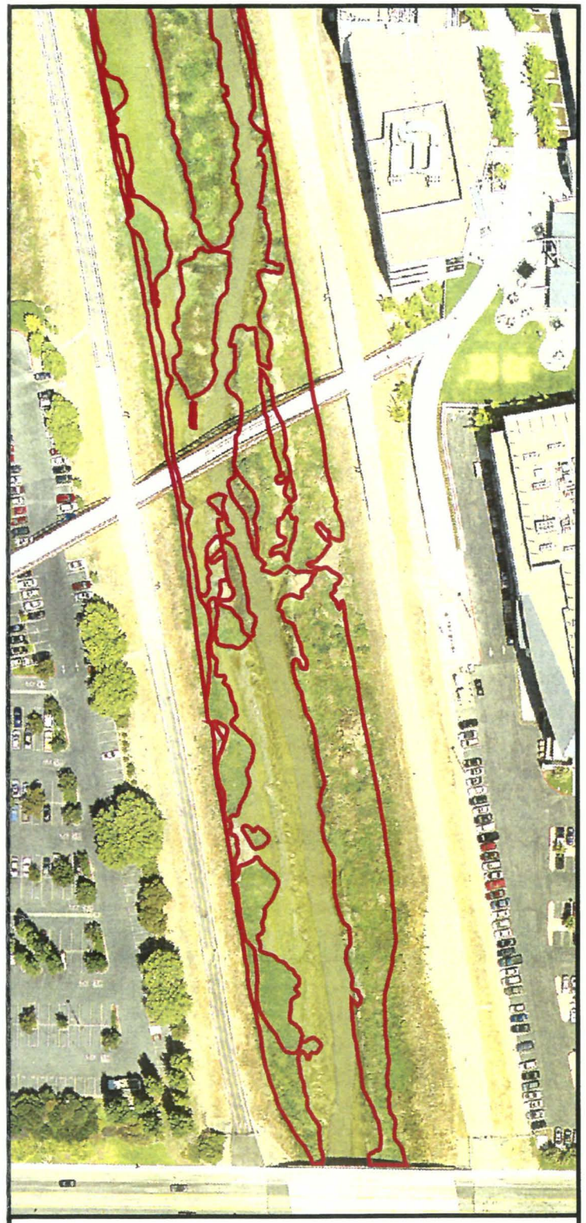

Figure 4D. Third Year Post-Project Wetlands.
Photo Date: August 2000.

N

100 0 100 200 Feet

Figure 4. San Tomas Aguino Creek (Tidal) Wetland Excavation Site upstream of Highway 237. Aerial View downstream of Old Alviso Road.

Wetland Boundary

Santa Clara Valley Water District

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Last Updated: March 01, 2001

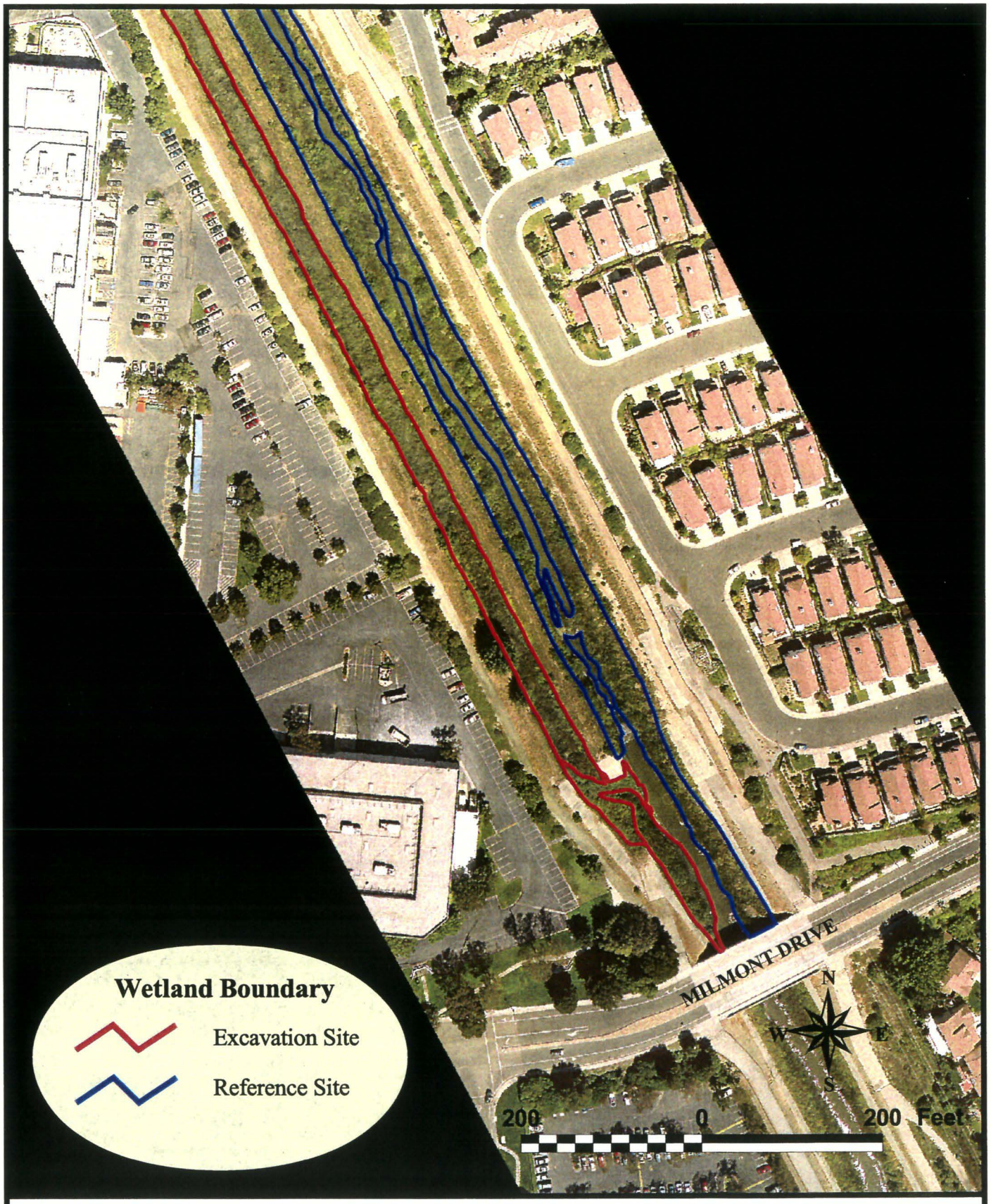


FIGURE 5. Lower Penitencia Creek Excavation and Adjacent Reference Sites (Photo: August 2000, Field Survey: October 2000). Aerial View D/S of Milmont Drive. Third Year Post-Project Wetlands.

Santa Clara Valley Water District

Vegetation Composition

For the past 2 years, nontidal sites have been comprised solely of Cattails and Other Native vegetation, and tidal sites have been comprised of California Bulrush and Other Natives (Figure 6). The total amount of Other Native vegetation has increased since 1999 in both tidal and nontidal reaches. The small amounts of nonnative vegetation present on both tidal and nontidal sites in the first postproject year, and on a nontidal site before excavation, were not present in either 1999 or 2000.

As much Cattail and Other Native vegetation were present on the nontidal sites within 2 years of excavation as before excavation (Figure 6). However, the sites on which Cattail vegetation was present varied annually. For example, Cattail vegetation was present for the first time on San Tomas Aquino u/s Central Expressway in 2000; the Cattail vegetation type first present on Saratoga Creek in 1999 was absent in 2000 after being sprayed with herbicide in 1999; and although Cattails were present on both North and South Morey Channels in 2000, Other Native vegetation was still mostly predominant where monotypic stands of Cattails stood prior to excavation in 1997.

Invasive species cover was greater than the lowest cover category in only one vegetation type on one site. Broad-leaf peppergrass (*Lepidium latifolium*) was abundant enough to occur in the higher relative cover category (6–25%) within Other Native vegetation on Jones Creek for the first time in 2000. The Jones site is adjacent to farmer fields and is subject to frequent discing to the top of bank and boundary of the wetland/upland interface, resulting in a large weed seed bank and continual disturbance.

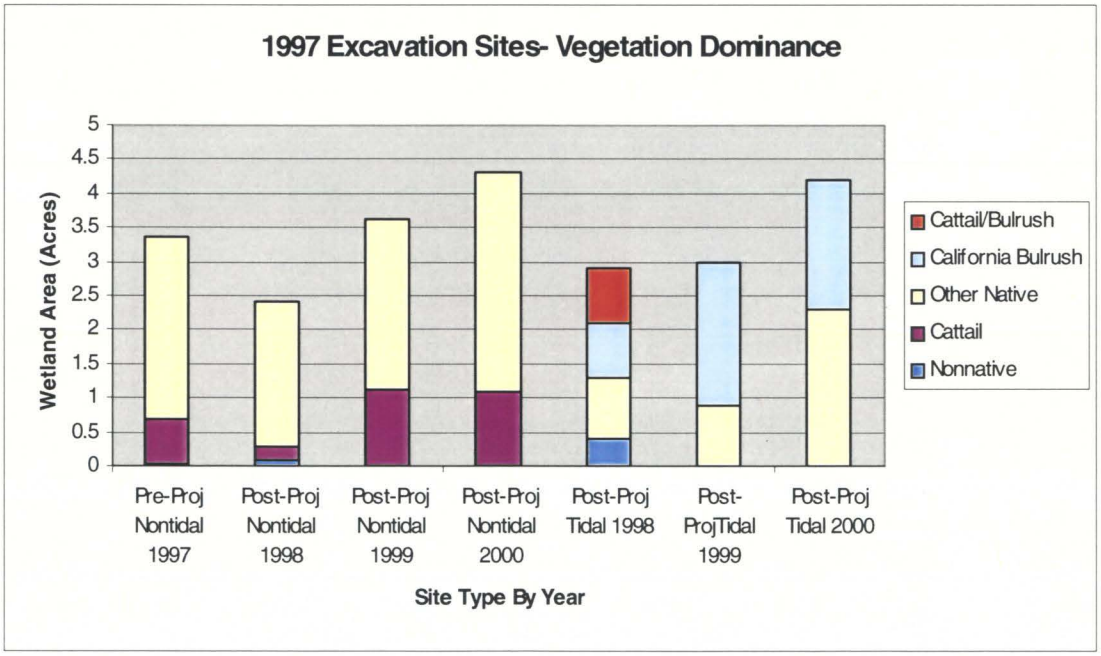


Figure 6. Vegetation dominance through 2000 in tidal and nontidal sites after sediment removal in 1997. (Preproject data were not available for the tidal sites.)

The composition of the tidal sites prior to excavation was inferred from pre-Study sources and is known in less detail than for the nontidal sites (Rankin and Hillman 1999). In 1995, 2 years prior to excavation, both tidal sites were dominated by bulrush, with numerous nonnative species, including broad-leaf peppergrass, also present, but at unknown abundances. Postproject, the Lower Penitencia site was again dominated by California bulrush, with peppergrass present in the (6–25%) category in both 2000 and 1999. (Note: There was no apparent increase in peppergrass from 1999 to 2000.) Peppergrass was distributed equally throughout both the regrowth and remnant vegetation that comprises the site, so did not appear to be favored by sediment removal.

The majority of the vegetation on San Tomas Aquino Creek by 2000 was Other Native, rather than California bulrush (but see Rankin and Hillman 1999 for discussion of probable eradication of bulrush prior to 1997 excavation). As noted above, slower sedimentation rates on this reach may be responsible for the slower relative rate of vegetation regrowth on this site. Likewise, as sediment accrues, water that may still be too deep to support bulrush, may be colonized by creeping macrophytes that can spread floating stems across water that is too deep to root in. We expect that as sedimentation continues, the Other Native vegetation will be replaced by bulrushes or Cattails.

The Morey Channels: Bridge Construction Effects

Wetland on North Morey Channel, which was reduced in 1999 due to bridge construction over the channel, regrew in 2000 within the temporary impact zone (Figure 7; Table 7). The area directly under the bridge is permanently impacted due to the subsequent shading of the channel by the bridge; however, wetland has begun to fill in other areas of the site and has resulted in regrowth that is comparable to what was reported in 1998. In contrast, South Morey Channel exhibited little increase from 1999 to 2000 (Table 7), as the Cattail-dominated vegetation has been slower to regrow within the temporary impact zone (Figure 8). However, the bridge on South Morey spans the area where the Excavation Site ends and the Reference Site begins, resulting in a smaller impact area on both sites. This is reflected in Table 7 (see Rankin and Hillman 2000 for results from previous years) such that bridge impact does not appear to have influenced the reported wetland acreage from 1998 to 2000.

Figure 7. North Morey Channel Excavation Site. Bridge was constructed over channel in 1999. Note that water primrose has regrown within the temporary impact area and occupies almost the entire channel bed up to the bridge. Photo Date: January 2001.

Figure 8. South Morey Channel Excavation and Adjacent Reference Site. Bridge was constructed over channel in 1999. Note that previously dominant Cattail has not yet regrown within the temporary impact zone on either side of the bridge. Cattails in foreground are seasonally dormant. Photo Date: January 2001.

1998 Project Excavation Sites: Second Year Postproject Regrowth

As with the 1997 Excavation Sites, there has been a steady increase in wetland vegetation regrowth on all 1998 Project Excavation sites since sediment excavation in 1998, and regrowth rates on tidal sites were lower than those on nontidal sites (Figure 9, Table 15). Overall regrowth rates in both nontidal and tidal areas were greater for 1998 Excavation Sites than for 1997 Sites, with over 100% regrowth achieved in the first (for nontidal) and second (for tidal) postproject years, respectively, rather than in the second and third years. All tidal and nontidal sites individually approached or exceeded 100% regrowth except for one site. Sunnyvale East, by postproject year 2, had only 14% regrowth. The flat sediment bench on which wetland grew prior to excavation has not reestablished and, therefore, there is as yet little appropriate habitat to support wetland on the excavated eastern side of the channel.

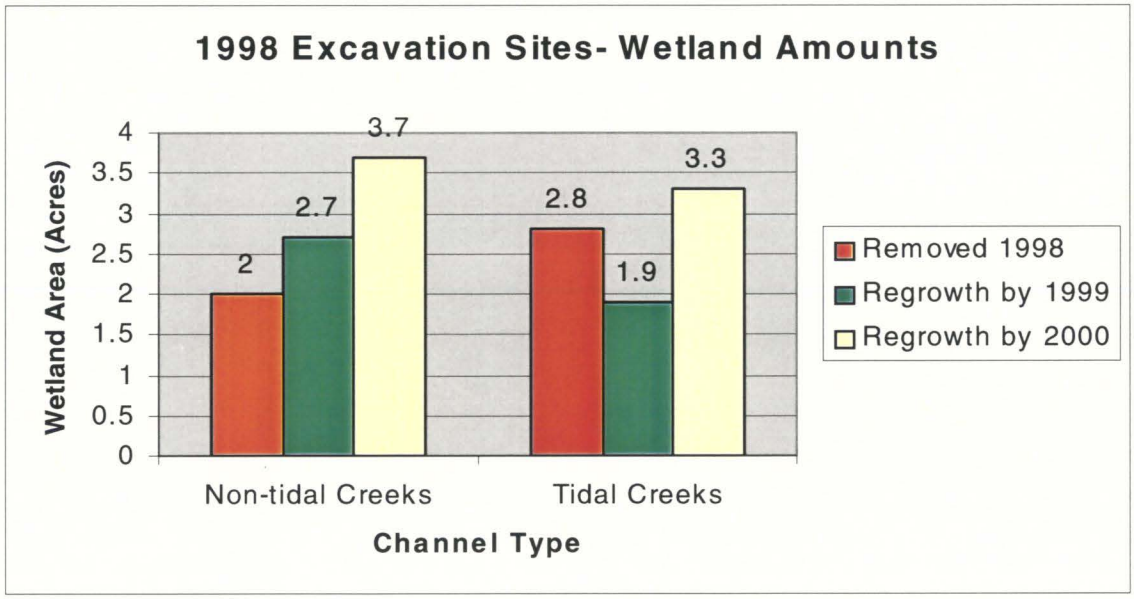


Figure 9. Wetland regrowth through 2000 in tidal and nontidal creeks after sediment excavation in 1998.

Vegetation Composition

As with the 1997 Excavation sites, Other Native vegetation was present on all sites in all years (Figures 6 and 10). However, in contrast to the 1997 sites, Nonnative vegetation was present on all sites and increased in both years postproject. An increase in the amounts of both Nonnative and Other Native vegetation was responsible for the overall increase in nontidal wetland amount. Cattail vegetation, which was absent the year following excavation, began to return to nontidal sites in the second postproject year, but remained less abundant than prior to excavation.

By postproject year 2, three vegetation types (Cattails, Other Natives, and California bulrush) occurred in greater abundance than prior to excavation on the tidal sites (Note: California bulrush was not present prior to excavation). Only Nonnative vegetation amounts were slightly lower than prior to excavation (Figure 10).

Most of the Nonnative wetland present in the 1998 sites occurs in the tidal and nontidal reaches of Berryessa Creek upstream of Lower Penitencia. Nonnative vegetation was also abundant on this site in 1999 and prior to excavation in 1998. (Note: Vegetation on this site comprises both regrowth and remnant vegetation [see Rankin and Hillman 1999].) Nonnative vegetation comprises about half the vegetation present in both the tidal and nontidal reach. This vegetation type was composed of mainly exotic annuals, which have shifted species dominance patterns each study year, implying that the site is in transition. Topographically, the site is varied; with mixed Nonnative wetland forming on sediment benches above the low flow channel. Many of these benches or bars contain soil that is moist but not saturated to the same extent as the low-lying areas that support native wetland vegetation types. The quality of some Nonnative vegetation patches improved in 2000, as a higher relative cover of native species was noted. These tidal and nontidal sections of Berryessa experienced the greatest regrowth by far of all the 1998 Excavation Sites (454% and 183%, respectively).

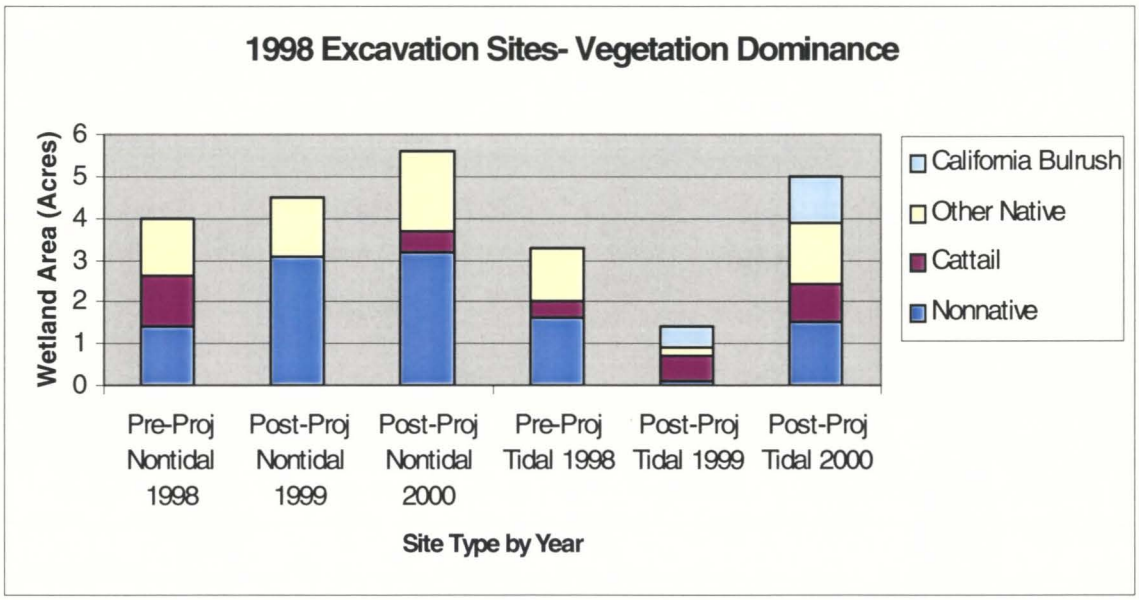


Figure 10. Vegetation dominance through 2000 in tidal and nontidal creeks after sediment excavation in 1998.

Adjacent Reference Sites

Wetland acreage in both nontidal and tidal Adjacent Reference Sties increased each year since 1998 (Figure 11; Table 15; note that 1997 and 1998 Sites were pooled before being represented graphically). By 2000, the amount of wetland in both nontidal and tidal sites was approximately 40% more than that present in 1998. Because tidal sites were generally larger than nontidal sites, and supported over twice as much wetland than nontidal sites in 1998, the 40% increase equates to almost double the amount of actual wetland acreage in tidal sites as compared to nontidal sites. Several of the tidal sites had more potential for wetland expansion than the nontidal sites due to the initial presence of an unvegetated low-flow channel in which wetland could expand. By contrast, in 1998, the available habitat in the channel bed was nearly completely occupied by

vegetation on several nontidal channels (e.g., Jones, Lions Creeks) and, therefore, there was less room for any significant wetland expansion.

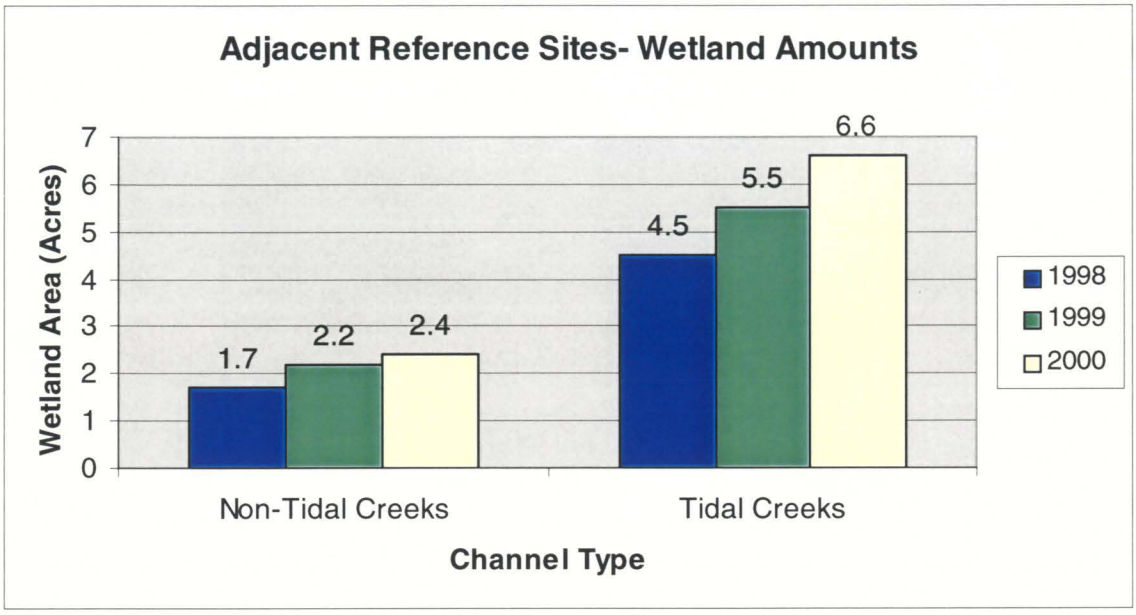


Figure 11. Wetland acreage through 2000 on Adjacent Reference Sites in tidal and nontidal creeks.

Vegetation Composition

Vegetation dominance has changed very little on the nontidal Adjacent Reference Sites since 1998, the first year in which both the 1997 and 1998 Adjacent Reference Sites were surveyed (Tables 10 and 11, Figure 12). Nontidal sites comprised solely Other Native and Cattail vegetation types in 2000. In 1998, a small amount (less than 0.01 ac) of Nonnative vegetation was also present.

Tidal sites experienced more change. These had mostly to do with the relative amounts and mixtures of California bulrush and Cattails (Tables 10 and 11 and Figure 12). By 2000 the amount of Other Native vegetation, which was present in all years, increased several-fold. On San Tomas, small amounts of California bulrush that were present in 1999 became an attribute of the Other Native vegetation type. Nonnative vegetation fluctuated annually, and by 2000, very little Nonnative vegetation was present. This Nonnative vegetation, on San Tomas Aquino in 2000, was the first and only vegetation in which an invasive species (broad-leaf peppergrass) was present in the 6–25% cover category, rather than the 0–5% category.

Vegetation quality indicators remained mostly unchanged. Changes which did occur usually involved minor shifts in total cover or relative cover of native and exotic species.

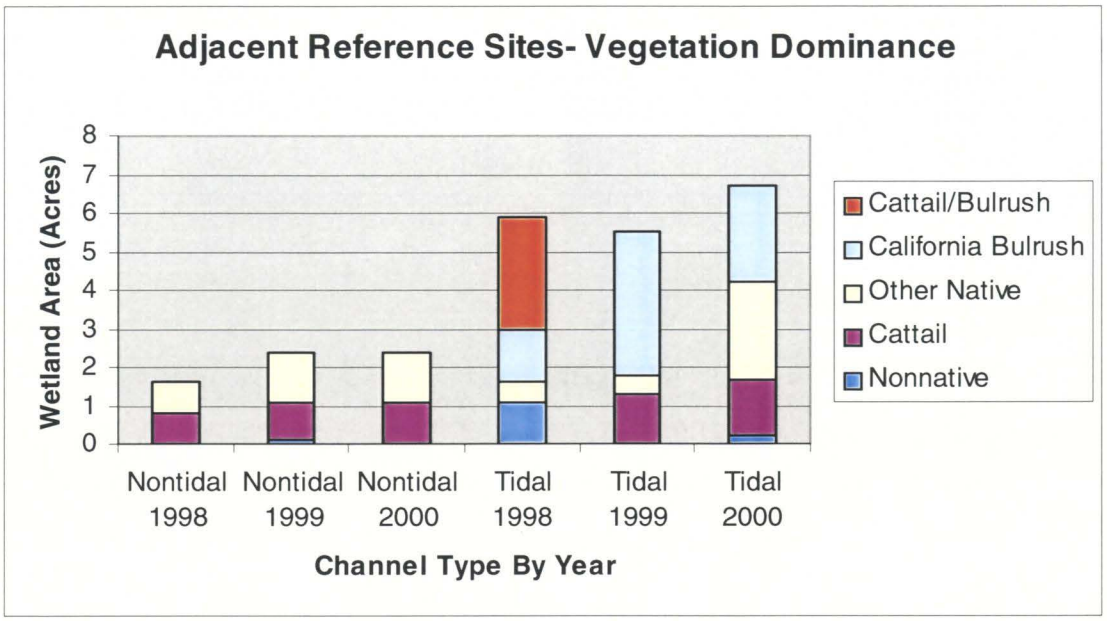


Figure 12. Vegetation dominance through 2000 in tidal and nontidal reference creeks.

General Reference Sites

Total wetland vegetation amounts on both nontidal and tidal General Reference Sites decreased the first year after surveys began (1997 and 1998, respectively) and increased each year thereafter (Figures 13 and 14). Although the amount of wetland vegetation in the nontidal sites increased in each of the past 2 years, there was still 20% less vegetation in 2000 than in 1997, the first year of nontidal surveys. The actual acreage changes were small, as wetland vegetation amounts on the nontidal sites were small. Despite the overall trend, each study year vegetation amounts on some of the individual nontidal sites did experience fluctuation.

By contrast, in 2000 there was nearly 6% more tidal vegetation present than in 1998, the first year of tidal surveys. Although wetland amounts increased in the past year on all tidal sites, most of the overall change was due to the increase on the Guadalupe River site, which is by far the largest of the General Reference sites. The amount of wetland vegetation on this site has increased despite being sprayed with herbicide for flood control purposes in 1998. Vegetation characteristics, however, have changed. The Guadalupe site now mainly consists of Other Native vegetation, which has grown up through the dead, matted Cattail that dominated the site in 1998 (Figure 15).

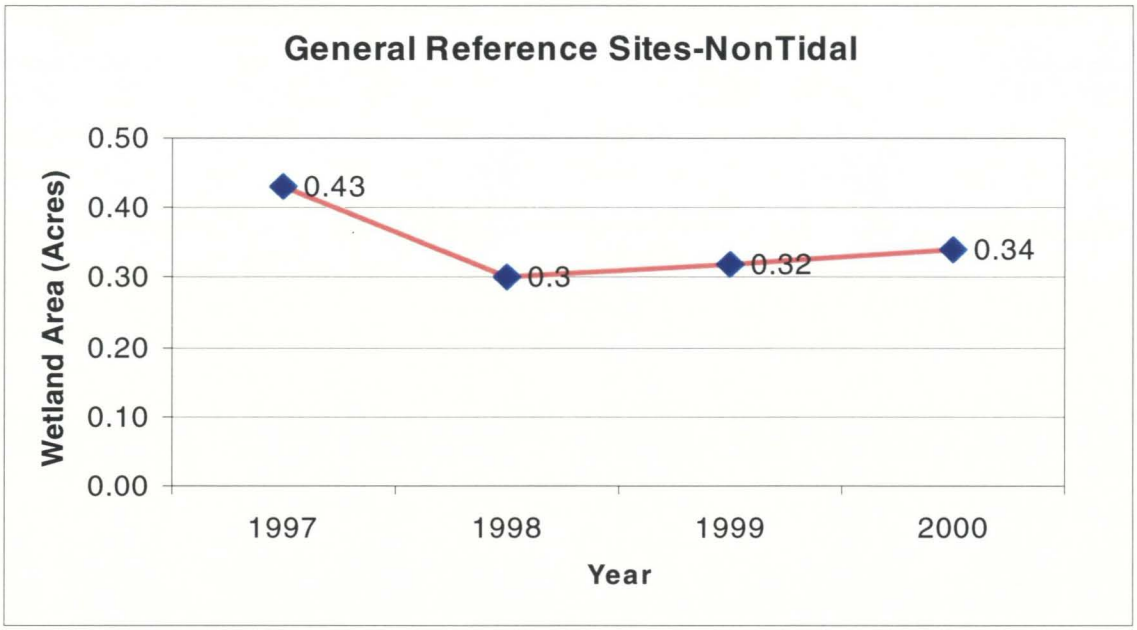


Figure 13. Wetland acreage through 2000 on nontidal General Reference Sites.

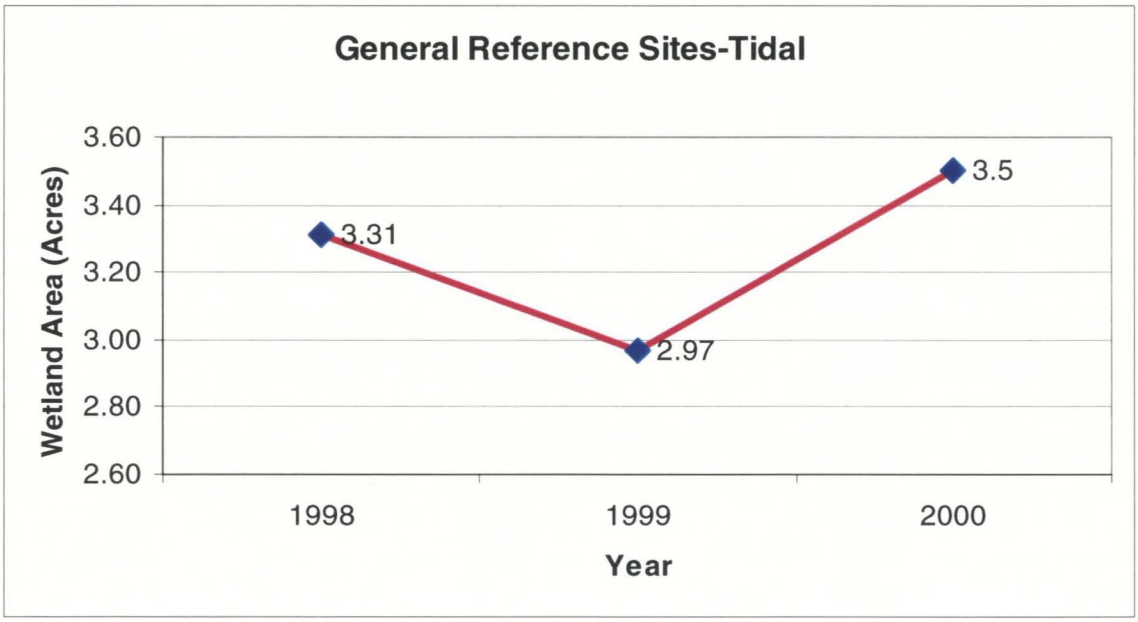
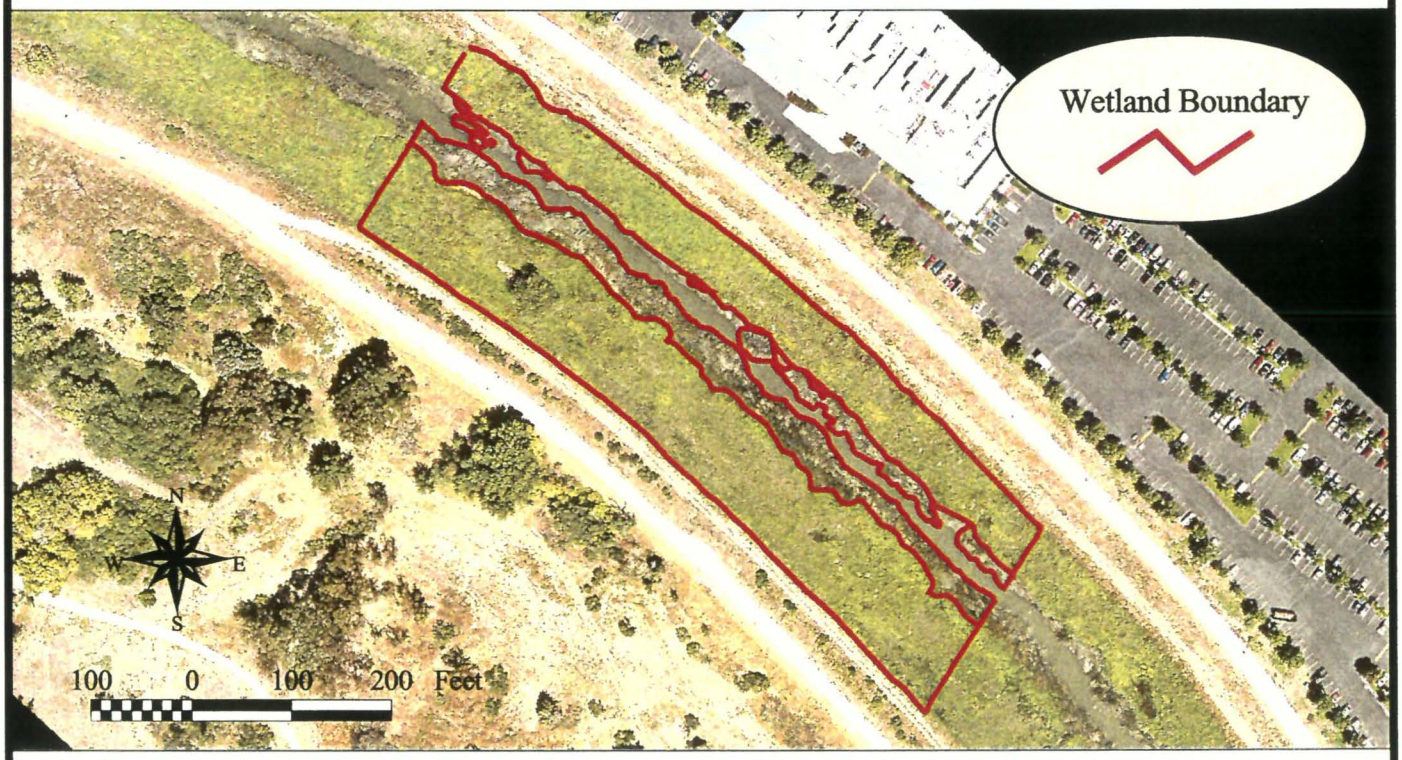


Figure 14. Wetland acreage through 2000 on tidal General Reference Sites.

15A. Photo: August 1999. Field Survey: September 1999. White areas are dead cattails.



15B. Photo: August 2000. Field Survey: October 2000. The wetland was dominated by fat hen (Atriplex triangularis) and bulrush (Scirpus californicus).

FIGURE 15. Guadalupe River General Reference Site.
Aerial View U/S Tasman Drive; 1999 and 2000.

Santa Clara Valley Water District

Vegetation Composition

Three vegetation types, Other Native, Cattail, and Nonnative, were present on nontidal General Reference Sites in each of the four study years (Figure 16). As with the Adjacent Reference Sites, the Other Native and Cattail types accounted for most of the vegetation, while Nonnative vegetation amounts were minimal. The relative and absolute amounts of each vegetation type changed from year to year. Other Native vegetation was the most abundant type in 1997, but decreased in abundance by about half since 1997. Cattail-dominated vegetation has experienced a three-fold increase since 1997 and was the most abundant vegetation type in 2000. The nonnative type decreased slightly since the study began.

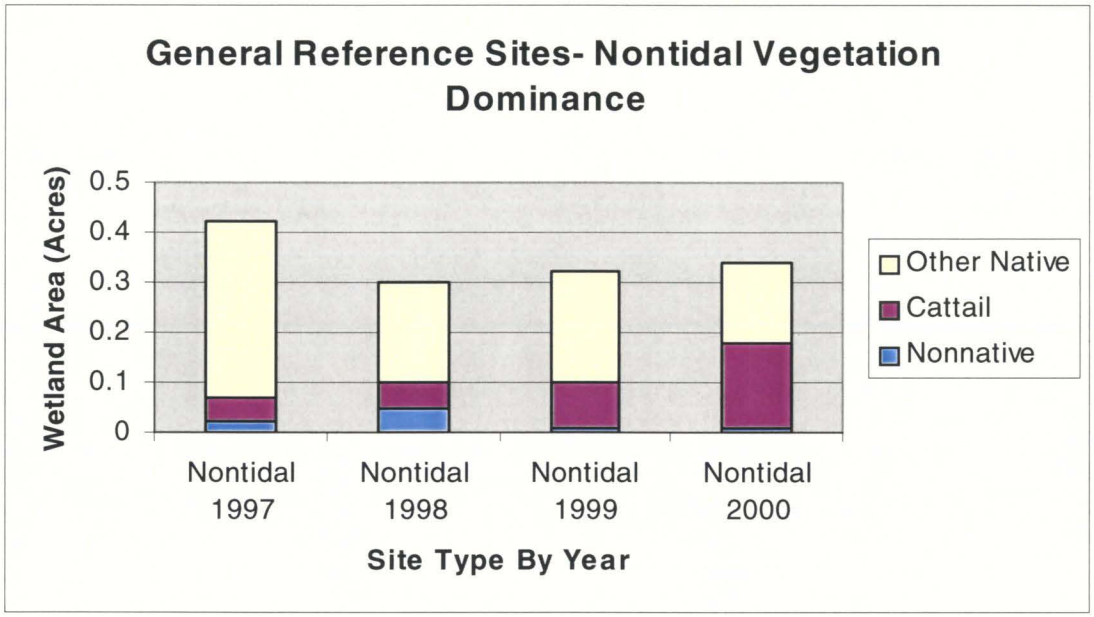


Figure 16. Vegetation dominance through 2000 in nontidal Adjacent Reference Sites.

Vegetation dominance changes on the tidal sites were greater than on either the nontidal General References Sites or the tidal Adjacent Reference Sites (Figure 17). A dramatic change occurred between 1998 and 1999, when Cattail/bulrush, the overwhelming dominant, was replaced by Other Native vegetation following herbicide spraying of the large Guadalupe River Site in 1998. A less dramatic change occurred from 1999 to 2000 when the amount of tall erect emergent vegetation both increased and changed to dominance by California bulrush.

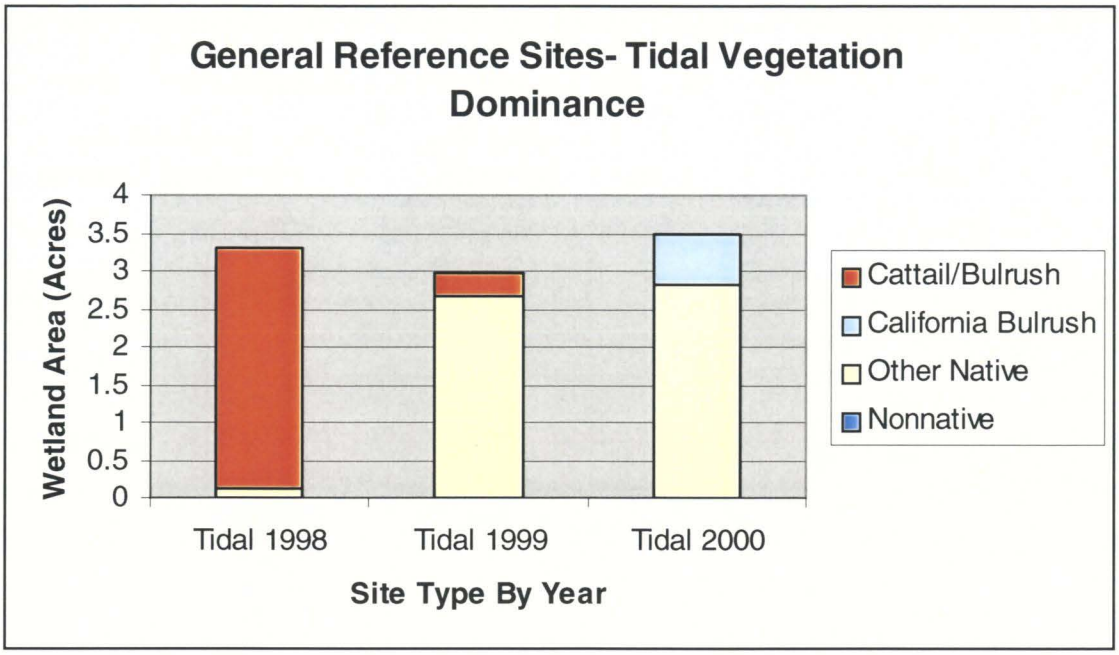


Figure 17. Vegetation dominance through 2000 in tidal Adjacent Reference Sites. *Note: 1997 data are not included because they are incomplete.*

Other Field Observations

The three small tidal sites each increased in wetland amounts from 1999-2000, as did the large Guadalupe River site. The increase on one site (Sunnyvale West) may have resulted from lack of mowing of the site in 2000, unlike past years. On another site (Stevens Creek), although wetland increased, the quality of the vegetation declined. The relative cover of Nonnative vegetation and invasive vegetation (broad-leafed peppergrass) both increased by one category.

One of the most surprising features was seen on San Francisquito Creek. In 2000, a low mud bar within the channel was vegetated with wetland for the first time. In previous years, this bar was much higher in elevation above the channel and contained an upland species association. This new wetland vegetation type accounted for 80% of the wetland on site in 2000.

Early rains that occurred before some of the General Reference Sites were sampled may have resulted in lower reported wetland amounts in 2000 due to slight to moderate scouring of the channels. Many of the General Reference Sites are located on small creeks with narrow channels, in neighborhoods where pavement causes runoff after even light precipitation. Greystone Creek, for example, was surveyed on a day after it had rained and had received some moderate flows, as was indicated by scour marks and deposition of plant material and sediment.

On Lower Silver, the decrease in wetland in 2000 follows a similar trend seen on Guadalupe River in 1999. Cattails were yellowed and dying in the channel, and resulted

in some areas with open water and reduced amount of wetland. It is likely that this phenomenon in both cases was due to spraying of perennial emergent vegetation in the channel for flood control purposes.

COMPARISON OF EXCAVATION AND REFERENCE SITES

Percentage increase or decrease comparisons between Excavation, Adjacent Reference, and General Reference Sites should be viewed as directional trend indicators rather than quantitative certainties. Sizeable differences in overall magnitude of acreage sampled in each category makes strict quantitative comparisons potentially misleading. For example, over five times the acreage of wetland was present in the 1998 Excavation Sites than in the 1998 Adjacent Reference Sites, and a small increase in overall acreage on the Reference Sites resulted in a large increase in percentage growth.

In general, after the initial decrease in wetland immediately after excavation, total nontidal wetland amounts have increased each year on all types of sites (Table 15, Figures 3, 9, 11, and 13). The only exception to this trend of increasing nontidal wetland each year was in 1998 when the amount of nontidal wetland in General Reference Sites decreased.

Most site types also had more nontidal wetland by 2000 than in their baseline years. By 2000, overall nontidal wetland amounts in 1997 and 1998 Excavation and all Adjacent Reference Sites collectively were greater than in the baseline reference years (1997 and 1998, respectively). Wetland amounts in these categories were all between 120 to 185% of baseline. The exception, again, was the General Reference Site category, in which the nontidal wetland acreage was less than 80% of that present in the 1997 baseline.

The overall acreage pattern for all tidal sites categories was similar to that seen in nontidal sites. After the initial decrease in wetland after excavation, the total amounts of tidal wetland increased each year in all site types, with the only exception a decline in General Reference Site wetland acreage in 1999 (Table 15, Figures 3, 9, 11, and 13).

As with the nontidal wetlands, by 2000, tidal wetland amounts in most site categories overall (including 1998 Excavation Sites; Adjacent Reference Sites, collectively; and General Reference Sites) were all in excess of the baseline amounts (ranging between 105 to 150%). An exception, however, was the 1997 Excavation Sites category, in which wetlands remained at just 64 % of baseline (the amount removed).

Vegetation Composition

Nontidal Vegetation Dominance

Other Native and Cattail vegetation types were present on all categories of nontidal sites in almost all years (1997 and 1998 Excavation, Adjacent Reference, and General Reference Sites) (Figures 6, 10, 12, and 16). Except for the 1998 Excavation Sites, nonnative vegetation was much less abundant. The only sites with notable amounts of nonnative vegetation were those with high benches above the summer water level or with dry stream beds in summer. Nonnative vegetation on these 1998 sites increased over time, as did overall wetland amount. The small amounts of nontidal Nonnative vegetation present

fluctuated slightly over time on the 1997 Excavation, Adjacent Reference, and General Reference Sites.

Other Native vegetation amounts remained comparable to or greater than baseline levels on 1997 and 1998 Excavation Sites and Adjacent Reference Sites over time. Only on General Reference Sites was there any decline in amount of Other Native vegetation. Cattail vegetation showed more variability. After excavation, a reduction in the overall amount of Cattails occurred on 1997 and 1998 Excavation Sites, with subsequent annual increases, resulting in overall rebound to preproject levels the 1997 Sites by 2000. By contrast, Cattail vegetation never decreased, but rather increased (sometimes slightly) over time on both the Adjacent and General Reference Sites.

Tidal Vegetation Dominance

Other Native and erect emergent vegetation (i.e., California Bulrush or Cattail vegetation types) were present on all Site category types in all years (Figures 6, 10, 12, and 17). Nonnative vegetation was sometimes present. In general, vegetation dominance was more variable on tidal than on nontidal sites. (The preproject baseline composition of the 1997 Excavation Sites not known, but are presumed to be similar to the postproject conditions [see 1997 Excavation Site discussion above].)

The amount of nonnative vegetation showed sizeable fluctuations between years in all Site categories, except for General Reference sites in which very little is present (Figures 6, 10, 12, and 17). With variable directions from year to year and within vegetation categories, there is no discernable pattern.

Other Native vegetation increased over time in all Site categories, including the General Reference Sites where it was apparently favored by vegetation spraying in 1998. The overall amount of tall erect emergent vegetation increased overall in the 1997 and 1998 Excavation Sites and the General Reference Sites, but declined in the Adjacent Reference Sites. The composition of erect emergent vegetation in all Site categories often shifted dominance or comprised various mixtures from year to year of Cattail/bulrush mix, California bulrush, and Cattail, again without apparent pattern.

Other Vegetation Features

During this Study, one or more of the following types of changes commonly occurred on both Excavation and Reference sites:

- Potentially positive shifts in vegetation dominance (e.g., appearance of new native vegetation, disappearance nonnative);
- Potentially neutral shifts in vegetation dominance (e.g., disappearance of one native vegetation type with the appearance of another); and
- Potentially negative shifts in vegetation dominance (e.g., disappearance of native vegetation type, appearance, or increase in amount of nonnative vegetation).

- Slight shifts in vegetation quality indicators within a vegetation dominance type. These usually consisted of increases in total vegetation cover or relative cover of natives.

For 2000, increases or decreases in total cover or relative cover of natives in the Excavation Sites were often in contrast to the Adjacent Reference Sites, which for the most part experienced little change in vegetation quality indicators from the previous year.

VEGETATION MANAGEMENT

Vegetation management is a significant component of the District's flood management maintenance program. Most Excavation and Reference Sites in this Study are subject to routine vegetation management. In North County, vegetation management within the stream channels comprises primarily herbicide treatment; in South County, it consists of hand removal of vegetation. The routine type of vegetation management indicated for each Study site, and any deviations known during the duration of the Study, is shown in Appendix I (Mark Wander, personal communication).

Although a reach is indicated for treatment on a routine basis, treatment may or may not be done within a specific reach in any particular year, depending on conditions found. When a reach is treated, the percentage of area treated within the reach also varies depending upon conditions. Aquatic herbicide application and hand removal target woody plants and tall emergent herbs such as Cattails; however, on some sites, lower growing herbaceous vegetation may also be removed.

Vegetation management has been ongoing before and during this Study. In general, aquatic herbicide work is conducted between July1 and October 15 and hand removal is conducted in December. In 1999 and 2000, all vegetation management activities on Study sites were conducted after field assessments; the timing of vegetation management in prior years is not known.

Vegetation changes on at least one site during the course of the study (Guadalupe River General Reference, sprayed in 1998) appear to have resulted from vegetation management actions. Several other sites, including Lower Silver Creek, Sunnyvale West, and Sunnyvale East channels appeared to have been at least partially sprayed or mowed. This Study does not document site-specific vegetation management actions or attempt to interpret effects of the vegetation management program. However, it is important to be aware that all Study data have been collected in the general context of ongoing vegetation management.

COMPARISON OF RESULTS TO DISTRICT WETLAND MITIGATION REQUIREMENTS

Permits for the District's 1997 Urgent Sediment Removal Projects require mitigation for impacts to 0.6 ac of nontidal and 8.9 ac of tidal wetlands. The amount of this wetland within the 1997 Excavation Sites was 0.39 ac nontidal and 4.08 ac tidal (Table 16, Note: 1.77 additional acres were on Berryessa, considered a 1998 site in this Study, and 2.6 additional acres were in the 1998 San Tomas [tidal] Excavation Site). These amounts are based on the assessments used for the 1997 Sediment Removal Project permits and environmental documents (TRA 1995 and 1997) and do not include the 1997 reassessments or corrections used for this comparative study (see Methods Section, Rankin and Hillman 1999). Addenda to the 1997 Sediment Removal Project permits identified additional work and

impacts, which are to be considered when formulating mitigation for the long-term program. These are also presented in Table 16.

This comparison is intended to relate permit obligations to the amount of wetland present during the latter part of the growing season from 1 to 3 years following the impacts. Wetland impacts, as determined for the Study baseline versus the 1997 permits, were higher in the 1997 permit nontidal sites and lower in the 1997 permit tidal sites and long-term program nontidal sites (Table 16). The amount of wetland regrowth in 1998 compared with impacts presented in the 1997 permits was approximately 303%, 15%, and 43% in the 1997 permit nontidal sites, 1997 permit tidal sites and long-term program nontidal sites, respectively; and 104%, 21%, and 60% as compared to the Study baseline. The amount of regrowth in 1999 compared with impacts per the 1997 permits was approximately 341%, 20%, and 54%, respectively; and 117%, 29%, and 75% as compared to the Study baseline. The amount of regrowth in 2000 compared with impacts per the 1997 permits was approximately 379%, 45%, and 80%, respectively, and 130%, 64%, and 111% as compared to the Study baseline.

STUDY GOALS AND OBJECTIVES AND SUMMARY RESULTS

The purpose of the Wetland Regrowth Study is to better define impacts to instream tidal and nontidal wetlands resulting from the District's sediment removal program. For 3 years, on the 1997 sites, and 2 years on the 1998 sites, the rate, extent, and vegetation characteristics of wetland in excavated and nonexcavated areas has been studied.

The third and final year evaluation of the 1997 Excavation Sites indicates substantial overall regrowth (97%; Table 15) since excavation. With total nontidal regrowth at 124% and tidal regrowth at 64%, vegetation on many sites now equals or exceeds preproject amounts. Three remaining nontidal sites have achieved at least 70% regrowth. One tidal site on San Tomas achieved 46% regrowth. Vegetation quality indicators on nontidal sites have shown little shift in wetland dominance or quality, and shifts which have occurred have been, for the most part, neutral or positive (such as change from one native vegetation type to another, or small shifts in total cover or native species relative cover).

Second postproject year evaluation of the 1998 Excavation Sites indicates even greater regrowth rates than on the 1997 Sites, with total regrowth of almost 144%, nontidal regrowth of 182%, and tidal regrowth of 117%. All 1998 sites had regrowth near to or more than100% by 2000 except the tidal Sunnyvale East (14%). Although the amount of nonnative vegetation is high, especially on Berryessa Creek, vegetation dominance types and quality indicators are similar to preproject conditions.

Table 16. 1997 Project Excavation Sites: Comparison of 2000 Wetland Regrowth with Impacts Determined for 1997 Sediment Removal Project Permits and for 1997 Study Baseline.[1,2]

Site	Wetland Impacts per 1997 Permits (acres)	Wetland Impacts per 1997 Preproject Study Baseline (acres)	Wetland Regrowth in 1998	Wetland Regrowth in 1999	Wetland Regrowth in 2000
Sites for which mitigation is required by 1997 permits					
Nontidal					
Los Coches	0.18	0.03	0.08	0.13	0.07
Saratoga	0.21	1.11	1.1	1.2	1.41
Total impact for which mitigation required per 1997 permit	0.39				
Total impact per 1997 baseline		1.14			
Peak wetland regrowth in 1998			1.18		
Peak wetland regrowth in 1999				1.33	
Peak wetland regrowth in 2000					1.48
Tidal					
Lower Penitencia [3]	1.45	0.96	0.5	0.64	0.96
San Tomas (tidal) u/s Highway 237 [4]	2.63	1.9	0.1	0.18	0.87
Total impact for which mitigation required per 1997 permit	4.08				
Total impact per 1997 baseline		2.86			
Peak wetland regrowth in 1998			0.6		
Peak wetland regrowth in 1999				0.82	
Peak wetland regrowth in 2000					1.83

Table 16. Continued.

Site	Wetland Impacts per 1997 Permits (acres)	Wetland Impacts per 1997 Preproject Study Baseline (acres)	Wetland Regrowth in 1998	Wetland Regrowth in 1999	Wetland Regrowth in 2000
Sites on which mitigation is required to be determined as part of the long-term program (all nontidal)					
Jones	0.43	0.4	0.23	0.34	0.29
North Morey	0.8	0.39	0.25	0.16	0.3
San Tomas (non-tidal) u/s Central Expressway (Walsh to railroad segment) [5]	0.2	0.2	0.1	0.24	0.62
South Morey	0.4	0.33	0.21	0.25	0.26
Total impact to be included with long-term program mitigation	1.83				
Total impact per 1997 baseline		1.32			
Peak wetland regrowth in 1998			0.79		
Peak wetland regrowth in 1999				0.99	
Peak wetland regrowth in 2000					1.47

1 Acreage reported to nearest 0.01 as in 1997 permit documents.
2 Numerical discrepancies can be accounted for due to the rounding of values.
3 Excavation Site is portion of larger Project Site.
4 5.27 ac in 1997 Excavation Site according to 1995 maps. (1/2 of wetland projected to be removed.)
5 No mitigation required for San Tomas U/S Central Expy (Central to Walsh segment).
{The figures for this site are 0.02 ac, 0.96, and 0.25 ac in 1995, 1997 and 1998.}

The substantial regrowth on all Excavation Study Sites indicates that instream wetland vegetation can and does recover from sediment removal activities. We have seen that regrowth was substantially slower on some tidal sites compared to other tidal sites and to all nontidal sites. In the 3 years that this Study has been conducted, we have also analyzed trends of vegetation dynamics and documented characteristics of regrowth. We observed that a higher incidence of nonnative species often coincided with higher-elevation, drier sediment bars that accumulate in the channels. In addition, we have determined that a reduction in Cattail amounts may occur after nontidal excavation, but that for the most part, changes in vegetation dominance and quality have been either neutral or positive and that similar vegetation fluctuations also occurred on reference sites. Although it was not a purpose of this Study to examine the effects of the District's vegetation management program on vegetation composition, we have seen indications of dominance shifts in vegetation from one type to another that may have resulted from this program.

RECOMMENDATIONS FOR FUTURE STUDY

In year 2000, two current study sites were scheduled for sediment removal projects: the Sunnyvale East 1998 Excavation Study Site and the San Francisquito General Reference Site. The affected area within the Excavation Study Site on Sunnyvale East consists of the first 100 ft of channel upstream of Caribbean Drive. On San Francisquito, wetland growing d/s Highway 101 in the channel bed was affected. Excavation occurred after Wetland Regrowth Study assessments for 2000 had been completed; therefore, the current year's totals are unaffected. However, future study of these sites will be discontinued per study protocol.

Three years of planned study have been completed on the 1997 Excavation Sites; therefore, the Study of these sites is concluded. After 2 of 3 years of planned study on the 1998 Excavation Sites, there is already more wetland present overall on both tidal and nontidal sites than prior to excavation. The sole individual 1998 Excavation Site that has not shown substantial regrowth, has been partially reexcavated, and will therefore not be studied further. Since the original purpose of the Study, ". . . to better define the nature of wetland impacts resulting from the District's sediment removal projects . . ." has been fulfilled by completing 3 study years on the 1997 sites, and recording the full overall reestablishment of wetland vegetation on the 1998 Excavation Sites, we recommend that study should end with this year 2000 report.

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APPENDIX A
Study Plant List

Wetland Vegetation Regrowth Study Plant List for 2000

Family Name	Species	Common Name	Wetland Indicator Status [1, 2]	Origin[3]
ACERACEAE	*Acer negundo var. californicum*	Box Elder	FACW	N
APIACEAE	*Cicuta sp.*	Water Hemlock	NOL	N
	Conium maculatum	Poison Hemlock	FACW	E
	Foeniculum vulgare	Fennel	FACU	E
ASTERACEAE	*Achillea millefolium*	Yarrow	FACU	N
	Artemisia douglasiana	Mugwort	FACW	N
	Aster subulatus var. ligulatus	Slim Aster	FACW	N
	Baccharis douglasii	Marsh Baccharis	OBL	N
	Bidens frondosa	Sticktight	FACW	N
	Conyza canadensis	Horseweed	FAC	N
	Cotula coronopifolia	Brass Buttons	FACW+	E
	Euthamia occidentalis	Western Goldenrod	OBL	N
	Gnaphalium luteo-album	Weedy Cudweed	FACW-	E
	Grindelia stricta	Gumplant	FACW	N
	Helenium puberulum	Sneezeweed	FACW	N
	Lactuca serriola	Prickly Lettuce	FAC	E
	Picris echioides	Bristly Ox-Tongue	FAC	E
	Sonchus asper	Prickly Sow Thistle	FAC	E
	Xanthium strumarium	Cocklebur	FAC+	E
BETULACEAE	*Alnus rhombifolia*	White Alder	FACW	N
BRASSICACEAE	*Brassica nigra*	Black Mustard	UPL	E
	Lepidium latifolium	Broad-Leaf Peppergrass	FACW	I
	Raphanus sativus	Wild Radish	UPL	E
	Rorippa nasturtium-aquaticum	Watercress	OBL	N
CAPRIFOLIACEAE	*Sambucus mexicana*	Blue Elderberry	FAC	N
CHENOPODIACEAE	*Atriplex triangularis*	Spearscale	FACW	N
	Chenopodium ambrosioides	Mexican Tea	FAC	E
	Salicornia virginica	Pickleweed	OBL	N
CYPERACEAE	*Cyperus eragrostis*	Tall Cyperus	FACW	N
	Cyperus esculentus	Yellow Nutgrass	FACW	N
	Cyperus involucratus	Umbrella Nutsedge	OBL	E
	Scirpus pungens	Common Threesquare	OBL	N
	Scirpus robustus	Alkali Bulrush	OBL	N
	Scirpus maritimus	Bulrush	OBL	N
	Scirpus californicus	California Bulrush	OBL	N
	Scirpus sp.	Bulrush	NOL	UNK
EQUISETACEAE	*Equisetum arvense*	Common Horsetail	FAC	N
EUPHORBIACEAE	*Ricinis communis*	Castor Bean	FACU	E
FABACEAE	*Medicago polymorpha*	California Burclover	NOL	E
	Melilotus alba	White Sweetclover	FACU+	E
JUNCACEAE	*Juncus bufonius*	Toad Rush	FACW+	N
	Juncus patens	Spreading Rush	FAC	N
	Juncus xiphioides	Iris-Leaved Rush	OBL	N
LAMIACEAE	*Mentha sp.*	Mint	NOL	UNK
	Mentha arvensis	Field Mint	FACW	E
	Mentha spicata	Spearmint	OBL	E
	Mentha x piperita	Peppermint	OBL	E
	Mentha pulegium	Pennyroyal	OBL	E
LYTHRACEAE	*Lythrum californicum*	California Loosestrife	OBL	N
MALVACEAE	*Malva sp.*	Mallow	NOL	E
MYRTACEAE	*Eucalyptus sp.*	Eucalyptus	NOL	E
ONAGRACEAE	*Epilobium ciliatum ssp. cilatum*	Common Willow-Herb	FACW	N
	Epilobium sp.	Willow-Herb	NOL	N

Wetland Vegetation Regrowth Study Plant List for 2000 (Continued)

Family Name	Species	Common Name	Wetland Indicator Status [1, 2]	Origin[3]
ONAGRACEAE	*Ludwigia peploides ssp. peploides*	Yellow Water Primrose	OBL	N
PLANTAGINACEAE	*Plantago major*	Common Plantain	FACW-	E
	Plantago sp.	Plantain	NOL	UNK
PLATANACEAE	*Platanus racemosa*	Western Sycamore	FACW	N
POACEAE	*Agrostis viridis*	Water Bent Grass	OBL	E
	Arundo donax	Giant Reed	FACW	I
	Cynodon dactylon	Bermuda Grass	FAC	E
	Digitaria sanguinalis	Crab Grass	FACU	E
	Echinochloa crus-galli	Barnyard Grass	FACW	E
	Leersia oryzoides	Rice Cutgrass	OBL	N
	Leptochloa fascicularis	Bearded Sprangletop	OBL	N
	Leymus triticoides	Alkali Ryegrass	FAC	N
	Lolium multiflorum	Italian Ryegrass	NOL	E
	Paspalum dilatatum	Dallis Grass	FAC	E
	Paspalum distichum	Knot Grass	OBL	N
	Phalaris aquatica	Harding Grass	FAC+	E
	Piptatherum miliaceum	Smilo Grass	NOL	E
	Polypogon monspeliensis	Annual Beard Grass	FACW+	E
	Polypogon interruptus	Ditch Beard Grass	OBL	E
	Sorghum halepense	Johnsongrass	FACU	E
	Sorghum bicolor	Sudan Grass	FAC	E
	Spartina foliosa	California Cordgrass	OBL	N
POLYGONACEAE	*Polygonum spp.*	Smartweed	NOL	N
	Polygonum amphibium var. emersum	Water Smartweed	OBL	N
	Polygonum lapathifolium	Willow Weed	OBL	N
	Polygonum persicaria	Lady's Thumb	FACW	E
	Polygonum punctatum	Water Smartweed	OBL	N
	Rumex salicifolius var. transitorius	Willow Herb	OBL	N
	Rumex crispus	Curly Dock	FACW-	E
PORTULACACEAE	*Portulaca oleracea*	Common Purslane	FAC	E
SALICACEAE	*Populus fremontii*	Fremont Cottonwood	FACW	N
	Salix laevigata	Red Willow	NOL	N
	Salix lasiolepis	Arroyo Willow	FACW	N
	Salix sp.	Willow	NOL	N
SCROPHULARIACEA	*Veronica anagallis-aquatica*	Water Speedwell	OBL	E
SOLANACEAE	*Solanum sp.*	Nightshade	NOL	E
TYPHACEAE	*Typha angustifolia*	Narrow-Leaved Cattail	OBL	N
	Typha latifolia	Broad-Leaved Cattail	OBL	N
	Typha sp.	Cattail	OBL	N
URTICACEAE	*Urtica dioica ssp. holosericea*	Hoary Nettle	FACW	N

[1] (Reed, 1998)

[2] WETLAND INDICATOR CATEGORY (PROBABILITY OF OCCURENCES IN WETLANDS):
Obligate (>99%), Facultative Wetland (67-99%), Facultative (34-66%), Facultative Upland (1-33%), Upland (<1%).
Not On List- NOL, NI- No Indicator Status Given

[3] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

APPENDIX B
Excavation Site Checklists

SCVWD Wetland Assessment Checklist

Facility Name: Jones Creek
Location: from Hwy 152 d/s approx. 930 ft (to weir)

Survey Start Date: 9/26/00
Survey End Date: 9/26/00

Survey Chronology: Post-Project Survey- 3rd Year
Site Type: RS, Excavation Study Site
Tidal or Nontidal: NonTidal
If nontidal, is water in channel?: No

Investigator: Janell Hillman
Station # Start: 12670
Station # End: 13600

Map or Photo Used: not applicable
Acreage Estimates Made From: Field Measure
Photo Documentation: Digital
Photo Code: 10J; 11J

Vegetation Type: Veg Type 1 of 2: Typha

Dominance (>50% Relative Cover): NonTidal: bulrush, cattail, burreed or mix

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	76-100%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

This section of Jones Creek contained two vegetation types, which alternately dominated the channel. Vegetation Type 1 of 2 was dominated by Typha latifolia (>50% relative cover). Typha grew thickly in the channel and the few other species that were found typically existed as a thin fringe along the upper bank margins. The Typha in the channel looked yellowed and dying; possibly due to the lack of water in the channel. Soil was slightly moist but not saturated. Other species that were yellowed and dying included Polygonum spp. Total cover was thick. Native species relative cover was between 76-100%.

The lack of water in the channel is a significant change from last year.

Estimated Wetland Amount: 6090 sq. ft (0.14 ac)

Code: 83

SCVWD Wetlands Plant List

Facility Name: Jones Creek
Location: from Hwy 152 d/s approx. 930 ft (to weir)

Survey Start Date: 9/26/00
Investigator: Janell Hillman

Survey Chronology: Post-Project Survey- 3rd Year
Site Type: RS, Excavation Study Site
Vegetation Type: Veg Type 1 of 2: Typha

Relative Cover	Family	Species	Wetland Indicator Status	Origin [1]
>50%	TYPHACEAE	*Typha latifolia*	OBL	N
<20%	APIACEAE	*Conium maculatum*	FACW	E
	ASTERACEAE	*Picris echioides*	FAC	E
	ASTERACEAE	*Xanthium strumarium*	FAC+	E
	BRASSICACEAE	*Lepidium latifolium*	FACW	I
	CHENOPODIACEAE	*Atriplex triangularis*	FACW	N
	CYPERACEAE	*Cyperus eragrostis*	FACW	N
	LAMIACEAE	*Mentha arvensis*	FACW	E
	ONAGRACEAE	*Epilobium ciliatum ssp. cilatum*	FACW	N
	POACEAE	*Polypogon monspeliensis*	FACW+	E
	POLYGONACEAE	*Rumex crispus*	FACW-	E
	POLYGONACEAE	*Polygonum punctatum*	OBL	N
	SALICACEAE	*Salix lasiolepis*	FACW	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 83

SCVWD Wetland Assessment Checklist

Facility Name: Jones Creek
Location: from Hwy 152 d/s approx. 930 ft (to weir)

Survey Start Date: 9/26/00
Survey End Date: 9/26/00

Survey Chronology: Post-Project Survey- 3rd Year
Site Type: RS, Excavation Study Site
Tidal or Nontidal: NonTidal
If nontidal, is water in channel?: No

Investigator: Janell Hillman
Station # Start: 12670
Station # End: 13600

Map or Photo Used: not applicable
Acreage Estimates Made From: Field Measure
Photo Documentation: Digital
Photo Code: 10J; 11J

Vegetation Type: Veg Type 2 of 2: low herbs

Dominance (>50% Relative Cover): NonTidal: other native

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	51-75%
Invasive Species Relative % Cover:	6-25%

Vegetation Description:

Vegetation Type 2 of 2 was co-dominated by several species. Polygonum punctatum, Epilobium ciliatium, and Atriplex triangularis each had 20-50% relative cover. The Polygonum was more common at the upstream end of the sample site near Hwy. 152.

Total cover was thick, but much of the vegetation was yellowed and dry due to lack of water in the channel. Soil was only slightly moist. Native species relative cover was between 51-75%. The invasive Lepidium latifolium grew thickly on the upland banks and fringed into the wetland (mid end of 6-25% relative cover).

Estimated Wetland Amount: 6348 sq. ft. (0.15 ac)

Code: 83

SCVWD Wetlands Plant List

Facility Name: Jones Creek
Location: from Hwy 152 d/s approx. 930 ft (to weir)

Survey Start Date: 9/26/00
Investigator: Janell Hillman

Survey Chronology: Post-Project Survey- 3rd Year
Site Type: RS, Excavation Study Site
Vegetation Type: Veg Type 2 of 2: low herbs

Relative Cover	Family	Species	Wetland Indicator Status	Origin [1]
=20-50%	CHENOPODIACEAE	*Atriplex triangularis*	FACW	N
	ONAGRACEAE	*Epilobium ciliatum ssp. cilatum*	FACW	N
	POLYGONACEAE	*Polygonum punctatum*	OBL	N
<20%	ASTERACEAE	*Picris echioides*	FAC	E
	ASTERACEAE	*Lactuca serriola*	FAC	E
	ASTERACEAE	*Xanthium strumarium*	FAC+	E
	BRASSICACEAE	*Lepidium latifolium*	FACW	I
	CYPERACEAE	*Cyperus eragrostis*	FACW	N
	CYPERACEAE	*Scirpus maritimus*	OBL	N
	POACEAE	*Echinochloa crus-galli*	FACW	E
	POACEAE	*Paspalum dilatatum*	FAC	E
	POACEAE	*Polypogon monspeliensis*	FACW+	E
	POLYGONACEAE	*Rumex crispus*	FACW-	E
	POLYGONACEAE	*Polygonum persicaria*	FACW	E
	POLYGONACEAE	*Rumex salicifolius var. transitorius*	OBL	N
	SALICACEAE	*Salix laevigata*	NOL	N
	TYPHACEAE	*Typha latifolia*	OBL	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 83

SCVWD Wetland Assessment Checklist

Facility Name: Los Coches Creek
Location: from South Park Victoria Dr to Dempsey Rd

Survey Start Date: 9/12/00
Survey End Date: 9/12/00

Survey Chronology: Post-Project Survey- 3rd Year
Site Type: RS, Excavation Study Site
Tidal or Nontidal: NonTidal
If nontidal, is water in channel?: Yes

Investigator: Janell Hillman
Station # Start: 1800
Station # End: 2300

Map or Photo Used: not applicable
Acreage Estimates Made From: Aerial Photo
Photo Documentation: Digital
Photo Code: 8J

Dominance (>50% Relative Cover): NonTidal: other native

Vegetation Quality Indicators:

Total % Cover:	51-75%
Native Species Relative % Cover:	51-75%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

Wetland on this section of Los Coches Creek was narrowly confined to a low flow channel. The most abundant species was Rorippa nasturtium-aquaticum (>50% relative cover). Total cover was between 51-75%. Native species relative cover was also between 51-75%. There were quite a few weedy species present on the fringes of the channel.

In contrast to last year's observations, the "wet weedy bar" located above the low flow channel was dry this year and contained a majority of upland species. Although there were a few wetland species present, they were widely scattered. Coupled with the absence of hydrologic indicators, this part of the channel was not considered wetland. Although the bar was high and dry, the low flow channel contained a great deal more water this year, and was actively flowing at the time of survey,

Estimated Wetland Amount: 0.07 ac

Code: 71

SCVWD Wetlands Plant List

Facility Name: Los Coches Creek
Location: from South Park Victoria Dr to Dempsey Rd
Survey Start Date: 9/12/00
Investigator: Janell Hillman

Survey Chronology: Post-Project Survey- 3rd Year
Site Type: RS, Excavation Study Site

Relative Cover	Family	Species	Wetland Indicator Status	Origin [1]
>50%	BRASSICACEAE	*Rorippa nasturtium-aquaticum*	OBL	N
<20%	APIACEAE	*Foeniculum vulgare*	FACU	E
	ASTERACEAE	*Conyza canadensis*	FAC	N
	ASTERACEAE	*Picris echioides*	FAC	E
	ASTERACEAE	*Xanthium strumarium*	FAC+	E
	CYPERACEAE	*Cyperus eragrostis*	FACW	N
	EUPHORBIACEAE	*Ricinis communis*	FACU	E
	FABACEAE	*Medicago polymorpha*	NOL	E
	LAMIACEAE	*Mentha sp.*	NOL	UNK
	LYTHRACEAE	*Lythrum californicum*	OBL	N
	ONAGRACEAE	*Epilobium ciliatum ssp. cilatum*	FACW	N
	ONAGRACEAE	*Ludwigia peploides ssp. peploides*	OBL	N
	POACEAE	*Echinochloa crus-galli*	FACW	E
	POACEAE	*Cynodon dactylon*	FAC	E
	POACEAE	*Sorghum halepense*	FACU	E
	POLYGONACEAE	*Rumex crispus*	FACW-	E
	POLYGONACEAE	*Polygonum punctatum*	OBL	N
	SALICACEAE	*Salix laevigata*	NOL	N
	SALICACEAE	*Salix lasiolepis*	FACW	N
	TYPHACEAE	*Typha angustifolia*	OBL	N
	TYPHACEAE	*Typha latifolia*	OBL	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 71

SCVWD Wetland Assessment Checklist

Facility Name: San Tomas Aquino Creek
Location: from Central Expwy to SPRR bridge

Survey Start Date: 9/28/00
Survey End Date: 9/29/00

Survey Chronology: Post-Project Survey- 3rd Year
Site Type: RS, Excavation Study Site
Tidal or Nontidal: NonTidal
If nontidal, is water in channel?: Yes

Investigator: Janell Hillman
Station # Start: 18700
Station # End: 21000

Map or Photo Used: not applicable
Acreage Estimates Made From: Aerial Photo
Photo Documentation: Digital
Photo Code: 11J; 12J

Notes: This assessment covers the section from Central Expwy to Walsh and from Walsh to SPRR. The segment from Walsh to SPRR was very similar to the downstream section, with the following distinctions: There was a lower abundance of Typha and of Rorippa in the Walsh to SPRR section. Vegetation Type 1 (Typha-dominated) formed a much more mixed community. Also, there were several seedlings and young saplings of Western sycamore (Platanus racemosa) present which were not found in the downstream section.

Vegetation Type: Vegetation Type 1 of 2: Typha mixed community

Dominance (>50% Relative Cover): NonTidal: bulrush, cattail, burreed or mix

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	51-75%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

This section of San Tomas Creek was vegetated by two types. Higher stature, emergent perennial wetland was found along the bank margins, while low-growing, thick herbaceous wetland vegetation covered the channel bed almost toe-to-toe.

Vegetation Type 1 of 2 was dominated by Typha angustifolia (>50% relative cover). However, community composition was mixed, with Xanthium strumarium and Polygonum spp. occurring as sub-dominants (20-50% relative cover of each). The common Polygonum was P. persicaria, with P. lapathifolium and P. punctatum in low quantities. Total cover was thick (76-100% category). Native species relative cover was at the lower end of 51-75%. This vegetation type was found along the bank margins and in slightly drier areas such as on gravel bars. Soil was cobbled and moist.

This year's assessment of San Tomas shows that a mixed Typha community is now present in the channel in addition to the low-stature herbaceous community (Ludwigia-dominated) of last year. This mixed Typha community is forming along the bank margins and is substantial enough this year to be called out as a separate vegetation type.

Estimated Wetland Amount: 0.93 ac

Code: 85

SCVWD Wetlands Plant List

Facility Name: San Tomas Aquino Creek
Location: from Central Expwy to SPRR bridge

Survey Start Date: 9/28/00
Investigator: Janell Hillman

Survey Chronology: Post-Project Survey- 3rd Year
Site Type: RS, Excavation Study Site
Vegetation Type: Vegetation Type 1 of 2: Typha mixed community

Relative Cover	Family	Species	Wetland Indicator Status	Origin[1]
>50%	TYPHACEAE	*Typha angustifolia*	OBL	N
=20-50%	ASTERACEAE	*Xanthium strumarium*	FAC+	E
	POLYGONACEAE	*Polygonum spp.*	NOL	N
<20%	APIACEAE	*Foeniculum vulgare*	FACU	E
	ASTERACEAE	*Conyza canadensis*	FAC	N
	ASTERACEAE	*Picris echioides*	FAC	E
	ASTERACEAE	*Bidens frondosa*	FACW	N
	ASTERACEAE	*Lactuca serriola*	FAC	E
	BRASSICACEAE	*Rorippa nasturtium-aquaticum*	OBL	N
	CHENOPODIACEAE	*Chenopodium ambrosioides*	FAC	E
	CYPERACEAE	*Cyperus eragrostis*	FACW	N
	CYPERACEAE	*Cyperus esculentus*	FACW	N
	EUPHORBIACEAE	*Ricinis communis*	FACU	E
	FABACEAE	*Melilotus alba*	FACU+	E
	ONAGRACEAE	*Epilobium ciliatum ssp. cilatum*	FACW	N
	ONAGRACEAE	*Ludwigia peploides ssp. peploides*	OBL	N
	POACEAE	*Echinochloa crus-galli*	FACW	E
	POACEAE	*Paspalum distichum*	OBL	N
	POACEAE	*Polypogon monspeliensis*	FACW+	E
	POACEAE	*Leersia oryzoides*	OBL	N
	POLYGONACEAE	*Rumex crispus*	FACW-	E
	POLYGONACEAE	*Polygonum lapathifolium*	OBL	N
	POLYGONACEAE	*Polygonum persicaria*	FACW	E
	POLYGONACEAE	*Polygonum punctatum*	OBL	N
	SALICACEAE	*Salix lasiolepis*	FACW	N
	TYPHACEAE	*Typha latifolia*	OBL	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 85

SCVWD Wetland Assessment Checklist

Facility Name: North Morey Channel
Location: from Santa Theresa Blvd d/s approx 1010 ft (to outfall)

Survey Start Date: 9/25/00
Survey End Date: 9/25/00

Survey Chronology: Post-Project Survey- 3rd Year
Site Type: RS, Excavation Study Site
Tidal or Nontidal: NonTidal
If nontidal, is water in channel?: Yes

Investigator: Janell Hillman
Station # Start: 504
Station # End: 1514

Map or Photo Used: not applicable
Acreage Estimates Made From: Field Measure
Photo Documentation: Digital
Photo Code: 9J and 10J

Dominance (>50% Relative Cover): NonTidal: other native

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	51-75%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

This section of North Morey Channel was dominated by Polygonum punctatum (>50% relative cover). Other common species were Typha angustifolia and Epilobium ciliatum. These two species were more prevalent at the upstream end of the sample site near Santa Theresa Blvd. Total cover was about 85%. The wetland fringed the bank edges and extended into the channel, with a thin, meandering braid of open water in the center. Areas of open water were commonly covered by the floating aquatic plant Lemna sp. Native species relative cover was at the high end of the 51-75% category.

There seems to be more Typha in the channel than last year. In general, the channel seems to have filled in with vegetation although it still contains occasional patches of open water in the center of the channel. Epilobium ciliatum is especially prevalent at the upstream end of the sample site.

Disturbance to the wetland from bridge construction has subsided, with the wetland growing up to the edge of the bridge and only the section permanently shaded by the bridge still lacking any regrowth. The downstream section near the outfall structure, which consisted of open water with almost no regrowth in past years, does support a thin fringe along the banks this year.

Estimated Wetland Amount: 12903 sq. ft. (0.30 ac)

Code: 79

SCVWD Wetlands Plant List

Facility Name: North Morey Channel
Location: from Santa Theresa Blvd d/s approx 1010 ft (to outfall)
Survey Start Date: 9/25/00
Investigator: Janell Hillman

Survey Chronology: Post-Project Survey- 3rd Year
Site Type: RS, Excavation Study Site

Relative Cover	Family	Species	Wetland Indicator Status	Origin[1]
>50%	POLYGONACEAE	*Polygonum punctatum*	OBL	N
<20%	ASTERACEAE	*Picris echioides*	FAC	E
	ASTERACEAE	*Lactuca serriola*	FAC	E
	BRASSICACEAE	*Rorippa nasturtium-aquaticum*	OBL	N
	CYPERACEAE	*Cyperus eragrostis*	FACW	N
	CYPERACEAE	*Scirpus robustus*	OBL	N
	FABACEAE	*Melilotus alba*	FACU+	E
	ONAGRACEAE	*Epilobium ciliatum ssp. cilatum*	FACW	N
	ONAGRACEAE	*Epilobium sp.*	NOL	N
	POACEAE	*Paspalum dilatatum*	FAC	E
	POACEAE	*Polypogon monspeliensis*	FACW+	E
	POLYGONACEAE	*Rumex crispus*	FACW-	E
	POLYGONACEAE	*Polygonum lapathifolium*	OBL	N
	SALICACEAE	*Populus fremontii*	FACW	N
	SALICACEAE	*Salix laevigata*	NOL	N
	SALICACEAE	*Salix lasiolepis*	FACW	N
	TYPHACEAE	*Typha angustifolia*	OBL	N
	TYPHACEAE	*Typha latifolia*	OBL	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 79

SCVWD Wetland Assessment Checklist

Facility Name: San Tomas Aquino Creek
Location: from Central Expwy to SPRR bridge

Survey Start Date: 9/28/00
Survey End Date: 9/29/00

Survey Chronology: Post-Project Survey- 3rd Year
Site Type: RS, Excavation Study Site
Tidal or Nontidal: NonTidal
If nontidal, is water in channel?: Yes

Investigator: Janell Hillman
Station # Start: 18700
Station # End: 21000

Map or Photo Used: not applicable
Acreage Estimates Made From: Aerial Photo
Photo Documentation: Digital
Photo Code: 11J; 12J

Notes: This assessment covers the section from Central Expwy to Walsh and from Walsh to SPRR. The segment from Walsh to SPRR was very similar to the downstream section, with the following distinctions: There was a lower abundance of Typha and of Rorippa in the Walsh to SPRR section. Vegetation Type 1 (Typha-dominated) formed a much more mixed community. Also, there were several seedlings and young saplings of Western sycamore (Platanus racemosa) present which were not found in the downstream section.

Vegetation Type: Vegetation Type 2 of 2: Ludwigia-Rorippa

Dominance (>50% Relative Cover): NonTidal: other native

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	76-100%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

Vegetation Type 2 of 2 was dominated by Ludwigia peploides (>50% relative cover), with Rorippa nasturtium-aquaticum occurring as a sub-dominant (20-50% relative cover). These two species accounted for most of the cover, with a few other species occurring at low abundance. Total cover was about 95% and thick except in areas where a thin, meandering center channel of open water was visible. Native species relative cover was high (76-100% category).

This vegetation type was found in the channel bed and occurred almost toe-to-toe. Soil was saturated with standing water.

Estimated Wetland Amount: 1.01 ac

Code: 85

SCVWD Wetlands Plant List

Facility Name: San Tomas Aquino Creek
Location: from Central Expwy to SPRR bridge
Survey Start Date: 9/28/00
Investigator: Janell Hillman

Survey Chronology: Post-Project Survey- 3rd Year
Site Type: RS, Excavation Study Site
Vegetation Type: Vegetation Type 2 of 2: Ludwigia-Rorippa

Relative Cover	Family	Species	Wetland Indicator Status	Origin [1]
>50%	ONAGRACEAE	*Ludwigia peploides ssp. peploides*	OBL	N
=20-50%	BRASSICACEAE	*Rorippa nasturtium-aquaticum*	OBL	N
<20%	ASTERACEAE	*Conyza canadensis*	FAC	N
	ASTERACEAE	*Lactuca serriola*	FAC	E
	ASTERACEAE	*Xanthium strumarium*	FAC+	E
	BRASSICACEAE	*Lepidium latifolium*	FACW	I
	CYPERACEAE	*Cyperus eragrostis*	FACW	N
	PLATANACEAE	*Platanus racemosa*	FACW	N
	POACEAE	*Cynodon dactylon*	FAC	E
	POACEAE	*Paspalum distichum*	OBL	N
	POLYGONACEAE	*Polygonum persicaria*	FACW	E

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 85

SCVWD Wetland Assessment Checklist

Facility Name: Saratoga Creek
Location: from San Tomas Aquino Crk to Cabrillo Ave

Survey Start Date: 9/6/00
Survey End Date: 9/6/00

Survey Chronology: Post-Project Survey- 3rd Year
Site Type: RS, Excavation Study Site
Tidal or Nontidal: NonTidal
If nontidal, is water in channel?: Yes

Investigator: Janell Hillman
Station # Start: 0
Station # End: 2000

Map or Photo Used: not applicable
Acreage Estimates Made From: Aerial Photo
Photo Documentation: Digital
Photo Code: 7J

Dominance (>50% Relative Cover): NonTidal: other native

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	51-75%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

This section of Saratoga Creek contained a low-flow channel and slightly higher sediment bars along the channel margin. The wetland occured almost continuously toe-to-toe and was co-dominated by Ludwigia peploides and Rorippa nasturtium-aquaticum (each with 20-50% relative cover). Veronica anagallis-aquatica was common but had less than 20% relative cover. Total cover (approx. 95%) was very thick in places, but slightly patchy in others. The higher sediment bars, common between the confluence of San Tomas Aquino Creek and Cabrillo Ave, were weedier; with Polygonum spp. (such as P. persicaria and P. lapathifolium), Melilotus albus, and Xanthium strumarium common. This habitat type was not called out separately due to difficulties in mapping the distinction, and the gradation between the types.

Water was flowing in the channel at time of survey. The substrate was cobbled and sandy with some silt. Open patches of water contained algae. The cattail vegetation type present in last year's survey was absent in 2000. However, there were occasional patches of young cattail (not flowering) growing in the channel.

Estimated Wetland Amount: 0.99 ac

Code: 67

SCVWD Wetlands Plant List

Facility Name: Saratoga Creek
Location: from San Tomas Aquino Crk to Cabrillo Ave
Survey Start Date: 9/6/00
Investigator: Janell Hillman

Survey Chronology: Post-Project Survey- 3rd Year
Site Type: RS, Excavation Study Site

Relative Cover	Family	Species	Wetland Indicator Status	Origin [1]
=20-50%	BRASSICACEAE	*Rorippa nasturtium-aquaticum*	OBL	N
	ONAGRACEAE	*Ludwigia peploides ssp. peploides*	OBL	N
<20%	APIACEAE	*Foeniculum vulgare*	FACU	E
	ASTERACEAE	*Picris echioides*	FAC	E
	ASTERACEAE	*Bidens frondosa*	FACW	N
	ASTERACEAE	*Lactuca serriola*	FAC	E
	ASTERACEAE	*Xanthium strumarium*	FAC+	E
	BRASSICACEAE	*Lepidium latifolium*	FACW	I
	CHENOPODIACEAE	*Atriplex triangularis*	FACW	N
	CYPERACEAE	*Scirpus californicus*	OBL	N
	EQUISETACEAE	*Equisetum arvense*	FAC	N
	FABACEAE	*Melilotus alba*	FACU+	E
	LAMIACEAE	*Mentha sp.*	NOL	UNK
	ONAGRACEAE	*Epilobium ciliatum ssp. cilatum*	FACW	N
	POACEAE	*Echinochloa crus-galli*	FACW	E
	POACEAE	*Paspalum dilatatum*	FAC	E
	POACEAE	*Paspalum distichum*	OBL	N
	POACEAE	*Leptochloa fascicularis*	OBL	N
	POACEAE	*Polypogon monspeliensis*	FACW+	E
	POACEAE	*Agrostis viridis*	OBL	E
	POLYGONACEAE	*Rumex crispus*	FACW-	E
	POLYGONACEAE	*Polygonum lapathifolium*	OBL	N
	POLYGONACEAE	*Polygonum persicaria*	FACW	E
	POLYGONACEAE	*Polygonum punctatum*	OBL	N
	SALICACEAE	*Populus fremontii*	FACW	N
	SALICACEAE	*Salix laevigata*	NOL	N
	SCROPHULARIACEAE	*Veronica anagallis-aquatica*	OBL	E
	TYPHACEAE	*Typha angustifolia*	OBL	N
	TYPHACEAE	*Typha sp.*	OBL	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 67

SCVWD Wetland Assessment Checklist

Facility Name: South Morey Channel
Location: from Santa Theresa Blvd d/s approx 830 ft

Survey Start Date: 9/25/00
Survey End Date: 9/25/00

Survey Chronology: Post-Project Survey- 3rd Year
Site Type: RS, Excavation Study Site
Tidal or Nontidal: NonTidal
If nontidal, is water in channel?: Yes

Investigator: Janell Hillman
Station # Start: 2688
Station # End: 3518

Map or Photo Used: not applicable
Acreage Estimates Made From: Field Measure
Photo Documentation: Digital
Photo Code: 10J

Vegetation Type: Type 1 of 2: Typha type

Dominance (>50% Relative Cover): NonTidal: bulrush, cattail, burreed or mix

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	76-100%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

This section of South Morey Channel contained three vegetation types. One type was dominated by perennial emergent wetland vegetation and occurred as several non-contiguous patches within the study site, while the other type was dominated by a low-growing herbaceous perennial and was found in one large patch and two smaller patches.

Type 1 of 2 was dominated by Typha latifolia (>50% relative cover) and sub-dominated by Typha angustifolia (20-50% relative cover). Young willow trees and saplings were common (especially Salix laevigata). Total cover was very thick. Native species relative cover was high (76-100% relative cover). This type was found at the upstream end of the sample site, near Santa Theresa Blvd, and at the downstream end of the site. The downstream section contained a small patch dominated by Scirpus californicus.

The impacts to wetland from the previous year's bridge construction have subsided. Wetland occurs adjacent to, but not on, the concrete aprons lining the channel at the bridge overpass and continuously throughout the channel on either side of the bridge. The area directly under the bridge is permanently shaded and does not show any wetland regrowth.

Estimated Wetland Amount: 6840 sq. ft. (0.16 ac)

Code: 80

SCVWD Wetlands Plant List

Facility Name: South Morey Channel
Location: from Santa Theresa Blvd d/s approx 830 ft

Survey Start Date: 9/25/00
Investigator: Janell Hillman

Survey Chronology: Post-Project Survey- 3rd Year
Site Type: RS, Excavation Study Site
Vegetation Type: Type 1 of 2: Typha type

Relative Cover	Family	Species	Wetland Indicator Status	Origin [1]
>50%	TYPHACEAE	*Typha latifolia*	OBL	N
=20-50%	TYPHACEAE	*Typha angustifolia*	OBL	N
<20%	ASTERACEAE	*Picris echioides*	FAC	E
	ONAGRACEAE	*Epilobium ciliatum ssp. cilatum*	FACW	N
	ONAGRACEAE	*Ludwigia peploides ssp. peploides*	OBL	N
	POLYGONACEAE	*Rumex crispus*	FACW-	E
	POLYGONACEAE	*Polygonum punctatum*	OBL	N
	SALICACEAE	*Salix laevigata*	NOL	N
	SALICACEAE	*Salix lasiolepis*	FACW	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 80

SCVWD Wetland Assessment Checklist

Facility Name: South Morey Channel
Location: from Santa Theresa Blvd d/s approx 830 ft

Survey Start Date: 9/25/00
Survey End Date: 9/25/00

Survey Chronology: Post-Project Survey- 3rd Year
Site Type: RS, Excavation Study Site
Tidal or Nontidal: NonTidal
If nontidal, is water in channel?: Yes

Investigator: Janell Hillman
Station # Start: 2688
Station # End: 3518

Map or Photo Used: not applicable
Acreage Estimates Made From: Field Measure
Photo Documentation: Digital
Photo Code: 10J

Vegetation Type: Type 2 of 2: Ludwigia type

Dominance (>50% Relative Cover): NonTidal: other native

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	76-100%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

Vegetation Type 2 of 3 was dominated by Ludwigia peploides (close to 100% relative cover), making this section of South Morey Channel fairly monospecific. Other species occurred occasionally as a fringe along the bank margins. Total cover was thick, and native species relative cover was high (76-100% for each).

Estimated Wetland Amount: 6885 sq. ft. (0.16 ac)

Code: 80

SCVWD Wetlands Plant List

Facility Name: South Morey Channel
Location: from Santa Theresa Blvd d/s approx 830 ft

Survey Start Date: 9/25/00
Investigator: Janell Hillman

Survey Chronology: Post-Project Survey- 3rd Year
Site Type: RS, Excavation Study Site
Vegetation Type: Type 2 of 2: Ludwigia type

Relative Cover	Family	Species	Wetland Indicator Status	Origin[1]
>50%	ONAGRACEAE	*Ludwigia peploides ssp. peploides*	OBL	N
<20%	ASTERACEAE	*Picris echioides*	FAC	E
	CYPERACEAE	*Cyperus eragrostis*	FACW	N
	ONAGRACEAE	*Epilobium ciliatum ssp. cilatum*	FACW	N
	POACEAE	*Polypogon monspeliensis*	FACW+	E
	POLYGONACEAE	*Rumex crispus*	FACW-	E
	TYPHACEAE	*Typha angustifolia*	OBL	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 80

SCVWD Wetland Assessment Checklist

Facility Name: Lower Penitencia Creek
Location: from Milmont Dr. d/s approx. 1900 ft

Survey Start Date: 10/13/00
Survey End Date: 10/13/00

Survey Chronology: Post-Project Survey- 3rd Year
Site Type: RS, Excavation Study Site
Tidal or Nontidal: Tidal
If nontidal, is water in channel?:

Investigator: Janell Hillman
Station # Start: 2050
Station # End: 4000

Map or Photo Used: not applicable
Acreage Estimates Made From: Aerial Photo
Photo Documentation: Digital
Photo Code: gale's digital camera

Vegetation Type: Vegetation Type 1 of 2

Dominance (>50% Relative Cover): Tidal: California bulrush

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	76-100%
Invasive Species Relative % Cover:	6-25%

Vegetation Description:

This section of Lower Penitencia Creek (west channel; excavation site) contained two wetland vegetation types: perennial emergent wetland (Type 1) dominated by California bulrush, and a patch of low-growing mixed herbaceous wetland.

Vegetation Type 1 of 2 occupied the narrow channel, which was fully vegetated with no open water or mud flat. It was dominated by Scirpus californicus (>50% relative cover). Typha latifolia and T. angustifolia were common especially at the upstream portion of the study site and together approached 20% relative cover. Total cover was thick and native cover was high (76-100% category). However, the fringe of the invasive exotic Lepidium latifolium that was present last year in the wetland was found in year 2000 as well. It formed a well-developed strip at the upper edge of the wetland along the bank.

Native species relative cover was higher this year in spite of the continued presence of Lepidium due to the dense, monospecific nature of bulrush in the channel. The Lepidium was not called out as a separate veg type due to difficulties in mapping the distinction on the aerial photo, and the limited amount of mixing that was present between types.

There were a number of young willow trees that have grown in along the bank margins. In addition, the abundance of cattails appears to have diminished while the bulrush has increased. There were some cattails at the wetland/upland boundary that were dead and appeared to have been sprayed.

Estimated Wetland Amount: 1.29 ac

Code: 94

SCVWD Wetlands Plant List

Facility Name: Lower Penitencia Creek
Location: from Milmont Dr. d/s approx. 1900 ft

Survey Start Date: 10/13/00
Investigator: Janell Hillman

Survey Chronology: Post-Project Survey- 3rd Year
Site Type: RS, Excavation Study Site
Vegetation Type: Vegetation Type 1 of 2

Relative Cover	Family	Species	Wetland Indicator Status	Origin [1]
>50%	CYPERACEAE	*Scirpus californicus*	OBL	N
<20%	ASTERACEAE	*Artemisia douglasiana*	FACW	N
	ASTERACEAE	*Baccharis douglasii*	OBL	N
	ASTERACEAE	*Picris echioides*	FAC	E
	ASTERACEAE	*Euthamia occidentalis*	OBL	N
	ASTERACEAE	*Xanthium strumarium*	FAC+	E
	BRASSICACEAE	*Lepidium latifolium*	FACW	I
	EUPHORBIACEAE	*Ricinis communis*	FACU	E
	LYTHRACEAE	*Lythrum californicum*	OBL	N
	ONAGRACEAE	*Epilobium ciliatum ssp. cilatum*	FACW	N
	PLATANACEAE	*Platanus racemosa*	FACW	N
	POLYGONACEAE	*Rumex crispus*	FACW-	E
	POLYGONACEAE	*Polygonum punctatum*	OBL	N
	SALICACEAE	*Populus fremontii*	FACW	N
	SALICACEAE	*Salix laevigata*	NOL	N
	SALICACEAE	*Salix lasiolepis*	FACW	N
	TYPHACEAE	*Typha angustifolia*	OBL	N
	TYPHACEAE	*Typha latifolia*	OBL	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 94

SCVWD Wetland Assessment Checklist

Facility Name: Lower Penitencia Creek
Location: from Milmont Dr. d/s approx. 1900 ft

Survey Start Date: 10/13/00
Survey End Date: 10/13/00

Survey Chronology: Post-Project Survey- 3rd Year
Site Type: RS, Excavation Study Site
Tidal or Nontidal: Tidal
If nontidal, is water in channel?:

Investigator: Janell Hillman
Station # Start: 2050
Station # End: 4000

Map or Photo Used: not applicable
Acreage Estimates Made From: Aerial Photo
Photo Documentation: Digital
Photo Code: gale's digital camera

Vegetation Type: Vegetation Type 2 of 2

Dominance (>50% Relative Cover): Tidal: other native

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	51-75%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

Vegetation Type 2 of 2 was located in one patch at the upstream end of the sample site, on a low bench near where the channel branches to form the east and west channel. Although there were no strong dominants in this mixed herbaceous type, Polygonum punctatum and Piptatherum milliaceum each occurred at between 20-50% relative cover. Total cover was thick (76-100%) and native species relative cover was at the lower end of the 51-75% category. Soil was very moist.

This is the same section that was called out as a non-native patch of vegetation in 1998.

Estimated Wetland Amount: 0.07 ac

Code: 94

SCVWD Wetlands Plant List

Facility Name: Lower Penitencia Creek
Location: from Milmont Dr. d/s approx. 1900 ft

Survey Start Date: 10/13/00
Investigator: Janell Hillman

Survey Chronology: Post-Project Survey- 3rd Year
Site Type: RS, Excavation Study Site
Vegetation Type: Vegetation Type 2 of 2

Relative Cover	Family	Species	Wetland Indicator Status	Origin[1]
=20-50%	POACEAE	*Piptatherum miliaceum*	NOL	E
	POLYGONACEAE	*Polygonum punctatum*	OBL	N
<20%	ASTERACEAE	*Picris echioides*	FAC	E
	BRASSICACEAE	*Lepidium latifolium*	FACW	I
	CYPERACEAE	*Cyperus eragrostis*	FACW	N
	EUPHORBIACEAE	*Ricinis communis*	FACU	E
	LYTHRACEAE	*Lythrum californicum*	OBL	N
	ONAGRACEAE	*Epilobium ciliatum ssp. cilatum*	FACW	N
	PLATANACEAE	*Platanus racemosa*	FACW	N
	POACEAE	*Phalaris aquatica*	FAC+	E
	POACEAE	*Echinochloa crus-galli*	FACW	E
	POACEAE	*Paspalum dilatatum*	FAC	E
	POACEAE	*Leptochloa fascicularis*	OBL	N
	POLYGONACEAE	*Rumex crispus*	FACW-	E
	TYPHACEAE	*Typha angustifolia*	OBL	N
	URTICACEAE	*Urtica dioica ssp. holosericea*	FACW	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 94

SCVWD Wetland Assessment Checklist

Facility Name: San Tomas Aquino Creek
Location: from Hwy 237 to Great America Pkwy

Survey Start Date: 9/18/00
Survey End Date: 9/21/00

Survey Chronology: Post-Project Survey- 3rd Year
Site Type: RS, Excavation Study Site
Tidal or Nontidal: Tidal
If nontidal, is water in channel?:

Investigator: Janell Hillman
Station # Start: 2700
Station # End: 5200

Map or Photo Used: not applicable
Acreage Estimates Made From: Aerial Photo
Photo Documentation: Digital
Photo Code: 8J

Vegetation Type: Vegetation Type 1 of 3: Mixed upper marsh

Dominance (>50% Relative Cover): Tidal: other native

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	51-75%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

Vegetation Type 1 of 3 was dominated by a mixture of herbaceous grasses (such as Leersia oryzoides, Piptatherum milliaceum, and Echinochloa crus-galli) and Polygonum spp. (P. punctatum and P. lapathifolium). It was found along bank margins and on higher benches above the channel. Total cover was thick (76-100%). Native species relative cover was at the lower end of 51-75%. Leersia oryzoides was more common at the downstream end of the site, while Polygonum spp. were more common at the upstream end.

Estimated Wetland Amount: 1.80 ac

Code: 73

SCVWD Wetlands Plant List

Facility Name: San Tomas Aquino Creek
Location: from Hwy 237 to Great America Pkwy
Survey Start Date: 9/18/00
Investigator: Janell Hillman

Survey Chronology: Post-Project Survey- 3rd Year
Site Type: RS, Excavation Study Site
Vegetation Type: Vegetation Type 1 of 3: Mixed upper marsh

Relative Cover	Family	Species	Wetland Indicator Status	Origin[1]
=20-50%	POACEAE	*Echinochloa crus-galli*	FACW	E
	POACEAE	*Leersia oryzoides*	OBL	N
	POLYGONACEAE	*Polygonum lapathifolium*	OBL	N
	POLYGONACEAE	*Polygonum punctatum*	OBL	N
<20%	ACERACEAE	*Acer negundo var. californicum*	FACW	N
	APIACEAE	*Foeniculum vulgare*	FACU	E
	ASTERACEAE	*Conyza canadensis*	FAC	N
	ASTERACEAE	*Cotula coronopifolia*	FACW+	E
	ASTERACEAE	*Artemisia douglasiana*	FACW	N
	ASTERACEAE	*Picris echioides*	FAC	E
	ASTERACEAE	*Bidens frondosa*	FACW	N
	ASTERACEAE	*Euthamia occidentalis*	OBL	N
	ASTERACEAE	*Lactuca serriola*	FAC	E
	ASTERACEAE	*Xanthium strumarium*	FAC+	E
	ASTERACEAE	*Aster subulatus var. ligulatus*	FACW	N
	BRASSICACEAE	*Lepidium latifolium*	FACW	I
	BRASSICACEAE	*Rorippa nasturtium-aquaticum*	OBL	N
	BRASSICACEAE	*Raphanus sativus*	UPL	E
	CHENOPODIACEAE	*Chenopodium ambrosioides*	FAC	E
	CHENOPODIACEAE	*Atriplex triangularis*	FACW	N
	CYPERACEAE	*Scirpus californicus*	OBL	N
	CYPERACEAE	*Cyperus eragrostis*	FACW	N
	EQUISETACEAE	*Equisetum arvense*	FAC	N
	EUPHORBIACEAE	*Ricinis communis*	FACU	E
	FABACEAE	*Melilotus alba*	FACU+	E
	ONAGRACEAE	*Epilobium ciliatum ssp. cilatum*	FACW	N
	ONAGRACEAE	*Ludwigia peploides ssp. peploides*	OBL	N
	PLANTAGINACEAE	*Plantago sp.*	NOL	UNK
	POACEAE	*Phalaris aquatica*	FAC+	E
	POACEAE	*Cynodon dactylon*	FAC	E
	POACEAE	*Paspalum dilatatum*	FAC	E
	POACEAE	*Paspalum distichum*	OBL	N
	POACEAE	*Piptatherum miliaceum*	NOL	E
	POACEAE	*Polypogon monspeliensis*	FACW+	E
	POACEAE	*Leymus triticoides*	FAC	N
	POACEAE	*Agrostis viridis*	OBL	E
	POLYGONACEAE	*Rumex crispus*	FACW-	E
	POLYGONACEAE	*Polygonum persicaria*	FACW	E
	SALICACEAE	*Salix laevigata*	NOL	N
	TYPHACEAE	*Typha angustifolia*	OBL	N

Code: 73

SCVWD Wetlands Plant List

Facility Name: San Tomas Aquino Creek
Location: from Hwy 237 to Great America Pkwy
Survey Start Date: 9/18/00
Investigator: Janell Hillman

Survey Chronology: Post-Project Survey- 3rd Year
Site Type: RS, Excavation Study Site
Vegetation Type: Vegetation Type 1 of 3: Mixed upper marsh

Relative Cover	Family	Species	Wetland Indicator Status	Origin[1]
<20%	TYPHACEAE	*Typha sp.*	OBL	N
	URTICACEAE	*Urtica dioica ssp. holosericea*	FACW	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 73

SCVWD Wetland Assessment Checklist

Facility Name: San Tomas Aquino Creek
Location: from Hwy 237 to Great America Pkwy

Survey Start Date: 9/18/00
Survey End Date: 9/21/00

Survey Chronology: Post-Project Survey- 3rd Year
Site Type: RS, Excavation Study Site
Tidal or Nontidal: Tidal
If nontidal, is water in channel?:

Investigator: Janell Hillman
Station # Start: 2700
Station # End: 5200

Map or Photo Used: not applicable
Acreage Estimates Made From: Aerial Photo
Photo Documentation: Digital
Photo Code: 8J

Vegetation Type: Vegetation Type 2 of 3: Ludwigia flats

Dominance (>50% Relative Cover): Tidal: other native

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	76-100%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

Vegetation Type 2 of 3 was dominated overwhelmingly by Ludwigia peploides (close to 100% relative cover), with only two other species present. It was found on low mud flats along the banks which were exposed at low tide. Vegetation was high in total cover and native species relative cover.

Estimated Wetland Amount: 0.36 ac

Code: 73

SCVWD Wetlands Plant List

Facility Name: San Tomas Aquino Creek
Location: from Hwy 237 to Great America Pkwy

Survey Start Date: 9/18/00
Investigator: Janell Hillman

Survey Chronology: Post-Project Survey- 3rd Year
Site Type: RS, Excavation Study Site
Vegetation Type: Vegetation Type 2 of 3: Ludwigia flats

Relative Cover	Family	Species	Wetland Indicator Status	Origin [1]
>50%	ONAGRACEAE	*Ludwigia peploides ssp. peploides*	OBL	N
<20%	ASTERACEAE	*Cotula coronopifolia*	FACW+	E
	TYPHACEAE	*Typha sp.*	OBL	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 73

SCVWD Wetland Assessment Checklist

Facility Name: San Tomas Aquino Creek
Location: from Hwy 237 to Great America Pkwy

Survey Start Date: 9/18/00
Survey End Date: 9/21/00

Survey Chronology: Post-Project Survey- 3rd Year
Site Type: RS, Excavation Study Site
Tidal or Nontidal: Tidal
If nontidal, is water in channel?:

Investigator: Janell Hillman
Station # Start: 2700
Station # End: 5200

Map or Photo Used: not applicable
Acreage Estimates Made From: Aerial Photo
Photo Documentation: Digital
Photo Code: 8J

Vegetation Type: Vegetation Type 3 of 3: Scirpus dominated

Dominance (>50% Relative Cover): Tidal: California bulrush

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	76-100%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

Vegetation Type 3 of 3 was dominated by Scirpus californicus (>50% relative cover). This vegetation type was found on in-stream islands as well as sporadically along bank margins. Scirpus-dominated vegetation was restricted to downstream of Old Mountainview Alviso Rd. Native species relative cover was between 76-100%.

Estimated Wetland Amount: 0.60 ac

Code: 73

SCVWD Wetlands Plant List

Facility Name: San Tomas Aquino Creek
Location: from Hwy 237 to Great America Pkwy

Survey Start Date: 9/18/00
Investigator: Janell Hillman

Survey Chronology: Post-Project Survey- 3rd Year
Site Type: RS, Excavation Study Site
Vegetation Type: Vegetation Type 3 of 3: Scirpus dominated

Relative Cover	Family	Species	Wetland Indicator Status	Origin [1]
>50%	CYPERACEAE	*Scirpus californicus*	OBL	N
<20%	EUPHORBIACEAE	*Ricinis communis*	FACU	E
	POLYGONACEAE	*Polygonum punctatum*	OBL	N
	SALICACEAE	*Salix sp.*	NOL	N
	TYPHACEAE	*Typha sp.*	OBL	N
	URTICACEAE	*Urtica dioica ssp. holosericea*	FACW	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 73

SCVWD Wetland Assessment Checklist

Facility Name: Berryessa Creek
Location: from Calaveras Blvd to Lower Penitencia Crk

Survey Start Date: 10/2/00
Survey End Date: 10/2/00

Survey Chronology: Post-Project Survey- 2nd Year
Site Type: RS, Excavation Study Site
Tidal or Nontidal: Mixed
If nontidal, is water in channel?:

Investigator: Janell Hillman
Station # Start: 0
Station # End: 8600

Map or Photo Used: not applicable
Acreage Estimates Made From: Aerial Photo
Photo Documentation: Digital
Photo Code:

Notes: Tidal Section: Lower Pen to RR

Vegetation Type: Tidal Type 1 of 3

Dominance (>50% Relative Cover): Tidal: cattail

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	76-100%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

This tidal section of Berryessa Creek contained three vegetation types: a high stature emergent, native type; a low-growing herbaceous native type; and a non-native type (typically found in areas higher above the low flow channel). The types were quite mixed on the site; in general, it was the relative cover of the dominants that defined the types since they shared many of the same species. Typically the soil was saturated and contained a high amount of silty clay.

Type 1 of 3 was dominated by Typha latifolia (>50% relative cover). This type was very common along the bank margins and at the water's edge. There were few other species present in any abundance; however, the two which were common were Scirpus californicus (occurring in clumped patches) and Ludwigia peploides (occurring as a fringe amongst the Typha at the water's edge). Total cover was thick and native species relative cover was high (76-100% category). This type was quite extensive on site, especially upstream of the confluence with Calera Creek.

Estimated Wetland Amount: 0.89 ac

Code: 86

SCVWD Wetlands Plant List

Facility Name: Berryessa Creek
Location: from Calaveras Blvd to Lower Penitencia Crk
Survey Start Date: 10/2/00
Investigator: Janell Hillman

Survey Chronology: Post-Project Survey- 2nd Year
Site Type: RS, Excavation Study Site
Vegetation Type: Tidal Type 1 of 3

Relative Cover	Family	Species	Wetland Indicator Status	Origin [1]
>50%	TYPHACEAE	*Typha latifolia*	OBL	N
<20%	ASTERACEAE	*Conyza canadensis*	FAC	N
	ASTERACEAE	*Picris echioides*	FAC	E
	ASTERACEAE	*Bidens frondosa*	FACW	N
	ASTERACEAE	*Xanthium strumarium*	FAC+	E
	ASTERACEAE	*Aster subulatus var. ligulatus*	FACW	N
	CHENOPODIACEAE	*Atriplex triangularis*	FACW	N
	CYPERACEAE	*Scirpus californicus*	OBL	N
	CYPERACEAE	*Cyperus eragrostis*	FACW	N
	EQUISETACEAE	*Equisetum arvense*	FAC	N
	LYTHRACEAE	*Lythrum californicum*	OBL	N
	ONAGRACEAE	*Epilobium ciliatum ssp. cilatum*	FACW	N
	ONAGRACEAE	*Ludwigia peploides ssp. peploides*	OBL	N
	PLATANACEAE	*Platanus racemosa*	FACW	N
	POACEAE	*Echinochloa crus-galli*	FACW	E
	POACEAE	*Piptatherum miliaceum*	NOL	E
	POACEAE	*Leersia oryzoides*	OBL	N
	POLYGONACEAE	*Polygonum lapathifolium*	OBL	N
	SALICACEAE	*Populus fremontii*	FACW	N
	SALICACEAE	*Salix laevigata*	NOL	N
	SALICACEAE	*Salix lasiolepis*	FACW	N
	TYPHACEAE	*Typha angustifolia*	OBL	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 86

SCVWD Wetland Assessment Checklist

Facility Name: Berryessa Creek
Location: from Calaveras Blvd to Lower Penitencia Crk

Survey Start Date: 10/2/00
Survey End Date: 10/2/00

Survey Chronology: Post-Project Survey- 2nd Year
Site Type: RS, Excavation Study Site
Tidal or Nontidal: Mixed
If nontidal, is water in channel?:

Investigator: Janell Hillman
Station # Start: 0
Station # End: 8600

Map or Photo Used: not applicable
Acreage Estimates Made From: Aerial Photo
Photo Documentation: Digital
Photo Code:

Notes: Tidal Section: Lower Pen to RR

Vegetation Type: Tidal Type 2 of 3

Dominance (>50% Relative Cover): Tidal: other native

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	51-75%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

Vegetation Type 2 of 3 was dominated by low-stature, herbaceous mixed natives. No one species was prevalent; however, common species included Cyperus eragrostis, Lythrum californicum, Paspalum distichum, Ludwigia peploides, and Polygonum spp. Total cover was between 76-100% and native species relative cover was in the 51-75% category (category was not the highest native primarily due to abundance of exotic grass Echinochloa crus galli). This type was found amongst the Cattail type (see previous assessment for Type 1) near the water's edge.

Estimated Wetland Amount: 0.14 ac

Code: 86

SCVWD Wetlands Plant List

Facility Name: Berryessa Creek
Location: from Calaveras Blvd to Lower Penitencia Crk
Survey Start Date: 10/2/00
Investigator: Janell Hillman

Survey Chronology: Post-Project Survey- 2nd Year
Site Type: RS, Excavation Study Site
Vegetation Type: Tidal Type 2 of 3

Relative Cover	Family	Species	Wetland Indicator Status	Origin [1]
<20%	ASTERACEAE	*Cotula coronopifolia*	FACW+	E
	ASTERACEAE	*Picris echioides*	FAC	E
	ASTERACEAE	*Helenium puberulum*	FACW	N
	ASTERACEAE	*Aster subulatus var. ligulatus*	FACW	N
	CHENOPODIACEAE	*Atriplex triangularis*	FACW	N
	CYPERACEAE	*Cyperus eragrostis*	FACW	N
	CYPERACEAE	*Scirpus maritimus*	OBL	N
	LAMIACEAE	*Mentha sp.*	NOL	UNK
	LYTHRACEAE	*Lythrum californicum*	OBL	N
	ONAGRACEAE	*Ludwigia peploides ssp. peploides*	OBL	N
	POACEAE	*Echinochloa crus-galli*	FACW	E
	POACEAE	*Paspalum distichum*	OBL	N
	POACEAE	*Leptochloa fascicularis*	OBL	N
	POACEAE	*Piptatherum miliaceum*	NOL	E
	POLYGONACEAE	*Rumex crispus*	FACW-	E
	POLYGONACEAE	*Polygonum lapathifolium*	OBL	N
	POLYGONACEAE	*Polygonum persicaria*	FACW	E
	POLYGONACEAE	*Polygonum spp.*	NOL	N
	TYPHACEAE	*Typha sp.*	OBL	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 86

SCVWD Wetland Assessment Checklist

Facility Name: Berryessa Creek
Location: from Calaveras Blvd to Lower Penitencia Crk

Survey Start Date: 10/2/00
Survey End Date: 10/2/00

Survey Chronology: Post-Project Survey- 2nd Year
Site Type: RS, Excavation Study Site
Tidal or Nontidal: Mixed
If nontidal, is water in channel?:

Investigator: Janell Hillman
Station # Start: 0
Station # End: 8600

Map or Photo Used: not applicable
Acreage Estimates Made From: Aerial Photo
Photo Documentation: Digital
Photo Code:

Notes: Tidal Section: Lower Pen to RR

Vegetation Type: Tidal Type 3 of 3

Dominance (>50% Relative Cover): Tidal: non-native

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	26-50%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

Vegetation Type 3 of 3 was dominated by mixture of exotic species such as Echinochloa crus galli and Picris echioides (20-50% relative cover each). It was found on higher bank margins above the channel and in areas further from the water's edge. Still, soil was moist. Total cover was thick (76-100%) and native species relative cover was low (lower end of 26-50% category). This type was quite extensive on site.

Estimated Wetland Amount: 0.75 ac

Code: 86

SCVWD Wetlands Plant List

Facility Name: Berryessa Creek
Location: from Calaveras Blvd to Lower Penitencia Crk
Survey Start Date: 10/2/00
Investigator: Janell Hillman

Survey Chronology: Post-Project Survey- 2nd Year
Site Type: RS, Excavation Study Site
Vegetation Type: Tidal Type 3 of 3

Relative Cover	Family	Species	Wetland Indicator Status	Origin [1]
=20-50%	ASTERACEAE	*Picris echioides*	FAC	E
	POACEAE	*Echinochloa crus-galli*	FACW	E
<20%	ASTERACEAE	*Conyza canadensis*	FAC	N
	ASTERACEAE	*Artemisia douglasiana*	FACW	N
	ASTERACEAE	*Bidens frondosa*	FACW	N
	ASTERACEAE	*Gnaphalium luteo-album*	FACW-	E
	ASTERACEAE	*Lactuca serriola*	FAC	E
	ASTERACEAE	*Xanthium strumarium*	FAC+	E
	ASTERACEAE	*Aster subulatus var. ligulatus*	FACW	N
	BRASSICACEAE	*Lepidium latifolium*	FACW	I
	BRASSICACEAE	*Raphanus sativus*	UPL	E
	CHENOPODIACEAE	*Atriplex triangularis*	FACW	N
	CYPERACEAE	*Scirpus californicus*	OBL	N
	CYPERACEAE	*Cyperus eragrostis*	FACW	N
	EQUISETACEAE	*Equisetum arvense*	FAC	N
	LYTHRACEAE	*Lythrum californicum*	OBL	N
	ONAGRACEAE	*Epilobium ciliatum ssp. cilatum*	FACW	N
	POACEAE	*Phalaris aquatica*	FAC+	E
	POACEAE	*Cynodon dactylon*	FAC	E
	POACEAE	*Leptochloa fascicularis*	OBL	N
	POLYGONACEAE	*Polygonum lapathifolium*	OBL	N
	POLYGONACEAE	*Polygonum persicaria*	FACW	E
	POLYGONACEAE	*Polygonum punctatum*	OBL	N
	SALICACEAE	*Salix laevigata*	NOL	N
	TYPHACEAE	*Typha sp.*	OBL	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 86

SCVWD Wetland Assessment Checklist

Facility Name: Berryessa Creek
Location: from Calaveras Blvd to Lower Penitencia Crk

Survey Start Date: 10/3/00
Survey End Date: 10/5/00

Survey Chronology: Post-Project Survey- 2nd Year
Site Type: RS, Excavation Study Site
Tidal or Nontidal: Mixed
If nontidal, is water in channel?: Yes

Investigator: Janell Hillman
Station # Start: 0
Station # End: 8600

Map or Photo Used: not applicable
Acreage Estimates Made From: Aerial Photo
Photo Documentation: Digital
Photo Code: 13 J

Notes: Nontidal section of the Excavation Study Site is from Calaveras Blvd. to RR.

Vegetation Type: Vegetation Type 1 of 5: Ludwigia/Typha

Dominance (>50% Relative Cover): NonTidal: other native

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	76-100%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

This section of Berryessa Creek contained a mixture of 5 wetland vegetation types. These types existed in a patchy mosaic pattern with varying topographic features. Soil was moist or saturated in all types. Species composition was similar across types; what distinguished them was the relative abundance of the dominant species.

Vegetation Type 1 of 5 was dominated by Ludwigia peploides (>50% relative cover), with Typha spp. (T. latifolia and T. angustifolia) existing as subdominant (20-50% relative cover combined). Ludwigia typcially formed a thick cover over the low flow channel which meandered throughout the site. Typha spp. were a common fringe along the banks of this low flow channel, especially T. latifolia. Vegetation was fairly monospecific. Other native species did exist in low abundance; i.e. Polygonum punctatum and Typha latifolia both were more common at the downstream end of the site. Total cover was thick and native (within the 76-100% category for each), and soils were either saturated or inundated with flowing water in the channel.

The other, nonnative (and one native) vegetation types typically were found on higher berms above this low flow channel (see following assessments).

Estimated Wetland Amount: 1.77 ac

Code: 90

SCVWD Wetlands Plant List

Facility Name: Berryessa Creek
Location: from Calaveras Blvd to Lower Penitencia Crk
Survey Start Date: 10/3/00
Investigator: Janell Hillman

Survey Chronology: Post-Project Survey- 2nd Year
Site Type: RS, Excavation Study Site
Vegetation Type: Vegetation Type 1 of 5: Ludwigia/Typha

Relative Cover	Family	Species	Wetland Indicator Status	Origin [1]
>50%	ONAGRACEAE	*Ludwigia peploides ssp. peploides*	OBL	N
=20-50%	TYPHACEAE	*Typha latifolia*	OBL	N
<20%	BRASSICACEAE	*Rorippa nasturtium-aquaticum*	OBL	N
	CYPERACEAE	*Scirpus sp.*	NOL	UNK
	EQUISETACEAE	*Equisetum arvense*	FAC	N
	LYTHRACEAE	*Lythrum californicum*	OBL	N
	POACEAE	*Echinochloa crus-galli*	FACW	E
	POACEAE	*Paspalum distichum*	OBL	N
	POACEAE	*Leptochloa fascicularis*	OBL	N
	POACEAE	*Agrostis viridis*	OBL	E
	POLYGONACEAE	*Polygonum lapathifolium*	OBL	N
	POLYGONACEAE	*Polygonum persicaria*	FACW	E
	POLYGONACEAE	*Polygonum punctatum*	OBL	N
	SALICACEAE	*Salix laevigata*	NOL	N
	TYPHACEAE	*Typha angustifolia*	OBL	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 90

SCVWD Wetland Assessment Checklist

Facility Name: Berryessa Creek
Location: from Calaveras Blvd to Lower Penitencia Crk

Survey Start Date: 10/3/00
Survey End Date: 10/5/00

Survey Chronology: Post-Project Survey- 2nd Year
Site Type: RS, Excavation Study Site
Tidal or Nontidal: Mixed
If nontidal, is water in channel?: Yes

Investigator: Janell Hillman
Station # Start: 0
Station # End: 8600

Map or Photo Used: not applicable
Acreage Estimates Made From: Aerial Photo
Photo Documentation: Digital
Photo Code: 13 J

Notes: Nontidal section of the Excavation Study Site is from Calaveras Blvd. to RR.

Vegetation Type:
Vegetation Type 2 of 5: Nonnative (Echinochloa crus-galli)

Dominance (>50% Relative Cover):
NonTidal: non-native

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	26-50%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

Vegetation Type 2 of 5 was dominated by Echinochloa crus-galli (>50% relative cover). Found on higher berms above the low-flow channel, this vegetation type had a patchy, clumped distribution. It typically occurred as smaller inclusion patches within larger stands of mixed exotic vegetation (see Type 3 of 5) and existed as isolated units across the entire sample reach. It typically was fairly monospecific, with few other species present. Total cover was thick (about 100%). Native species relative cover at the low end of 26-50%).

Estimated Wetland Amount:
0.41 ac

Code: 90

SCVWD Wetlands Plant List

Facility Name: Berryessa Creek
Location: from Calaveras Blvd to Lower Penitencia Crk
Survey Start Date: 10/3/00
Investigator: Janell Hillman

Survey Chronology: Post-Project Survey- 2nd Year
Site Type: RS, Excavation Study Site
Vegetation Type: Vegetation Type 2 of 5: Nonnative (Echinochloa crus-galli)

Relative Cover	Family	Species	Wetland Indicator Status	Origin [1]
>50%	POACEAE	*Echinochloa crus-galli*	FACW	E
<20%	ASTERACEAE	*Conyza canadensis*	FAC	N
	ASTERACEAE	*Picris echioides*	FAC	E
	ASTERACEAE	*Xanthium strumarium*	FAC+	E
	CYPERACEAE	*Cyperus eragrostis*	FACW	N
	POACEAE	*Phalaris aquatica*	FAC+	E
	POLYGONACEAE	*Polygonum persicaria*	FACW	E
	SALICACEAE	*Populus fremontii*	FACW	N
	SALICACEAE	*Salix laevigata*	NOL	N
	TYPHACEAE	*Typha latifolia*	OBL	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 90

SCVWD Wetland Assessment Checklist

Facility Name: Berryessa Creek
Location: from Calaveras Blvd to Lower Penitencia Crk

Survey Start Date: 10/3/00
Survey End Date: 10/5/00

Survey Chronology: Post-Project Survey- 2nd Year
Site Type: RS, Excavation Study Site
Tidal or Nontidal: Mixed
If nontidal, is water in channel?: Yes

Investigator: Janell Hillman
Station # Start: 0
Station # End: 8600

Map or Photo Used: not applicable
Acreage Estimates Made From: Aerial Photo
Photo Documentation: Digital
Photo Code: 13 J

Notes: Nontidal section of the Excavation Study Site is from Calaveras Blvd. to RR.

Vegetation Type: Vegetation Type 3 of 5: Nonnative (mixed exotics)

Dominance (>50% Relative Cover): NonTidal: non-native

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	11-25%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

Vegetation Type 3 of 5 was composed of a mixture of exotic species, with no one species predominating. Picris echioides, Echinochloa crus-galli, and Xanthium strumarium all were very common (20-50% relative cover of each), with Picris echioides possibly the most common species. Total cover was thick (within the 76-100% category) and native species relative cover was extremely low (11-25%). This vegetation type was quite common throughout the study reach and typcially existed on benches slightly above the low flow channel and adjacent to the lower access roads which run along the main channel. Soil was moist and sandy. Often, a thin layer of native wetland species was found in the understory and at the edges of this vegetation type. These species did not look very vigorous.

Occasionally, more monospecific patches of Echinochloa crus galli and of Xanthium strumarium were evident. These patches were called out as separate vegetation types (see associated assessments).

Estimated Wetland Amount: 1.83 ac

Code: 90

SCVWD Wetlands Plant List

Facility Name: Berryessa Creek
Location: from Calaveras Blvd to Lower Penitencia Crk
Survey Start Date: 10/3/00
Investigator: Janell Hillman

Survey Chronology: Post-Project Survey- 2nd Year
Site Type: RS, Excavation Study Site
Vegetation Type: Vegetation Type 3 of 5: Nonnative (mixed exotics)

Relative Cover	Family	Species	Wetland Indicator Status	Origin [1]
=20-50%	ASTERACEAE	*Picris echioides*	FAC	E
	ASTERACEAE	*Xanthium strumarium*	FAC+	E
	POACEAE	*Echinochloa crus-galli*	FACW	E
<20%	ASTERACEAE	*Sonchus asper*	FAC	E
	ASTERACEAE	*Conyza canadensis*	FAC	N
	ASTERACEAE	*Lactuca serriola*	FAC	E
	CYPERACEAE	*Cyperus eragrostis*	FACW	N
	EQUISETACEAE	*Equisetum arvense*	FAC	N
	LYTHRACEAE	*Lythrum californicum*	OBL	N
	ONAGRACEAE	*Epilobium ciliatum ssp. cilatum*	FACW	N
	POACEAE	*Cynodon dactylon*	FAC	E
	POACEAE	*Leptochloa fascicularis*	OBL	N
	POACEAE	*Piptatherum miliaceum*	NOL	E
	POACEAE	*Polypogon monspeliensis*	FACW+	E
	POACEAE	*Agrostis viridis*	OBL	E
	POLYGONACEAE	*Polygonum lapathifolium*	OBL	N
	POLYGONACEAE	*Polygonum persicaria*	FACW	E
	POLYGONACEAE	*Polygonum punctatum*	OBL	N
	SALICACEAE	*Populus fremontii*	FACW	N
	SALICACEAE	*Salix laevigata*	NOL	N
	TYPHACEAE	*Typha latifolia*	OBL	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 90

SCVWD Wetland Assessment Checklist

Facility Name: Berryessa Creek
Location: from Calaveras Blvd to Lower Penitencia Crk

Survey Start Date: 10/3/00
Survey End Date: 10/5/00

Survey Chronology: Post-Project Survey- 2nd Year
Site Type: RS, Excavation Study Site
Tidal or Nontidal: Mixed
If nontidal, is water in channel?: Yes

Investigator: Janell Hillman
Station # Start: 0
Station # End: 8600

Map or Photo Used: not applicable
Acreage Estimates Made From: Aerial Photo
Photo Documentation: Digital
Photo Code: 13 J

Notes: Nontidal section of the Excavation Study Site is from Calaveras Blvd. to RR.

Vegetation Type:

Vegetation Type 4 of 5: Nonnative (Xanthium strumarium)

Dominance (>50% Relative Cover):

NonTidal: non-native

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	26-50%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

Vegetation Type 4 of 5 was dominated by Xanthium strumarium (>50% relative cover). This vegetation type occurred as patches on higher berms and benches above the low flow channel, often surrounded by a more mixed community of exotics (see previous assessment). Total cover was thick (76-100%) and nonnative (native species relative cover at the low end of 26-50%). Soil was sandy and moist. Picris echioides was also common in this type. Occasionally, a thin green layer of scattered and stunted native wetland species was observed in the understory and at the edges of this type.

Estimated Wetland Amount:

0.98 ac

Code: 90

SCVWD Wetlands Plant List

Facility Name: Berryessa Creek
Location: from Calaveras Blvd to Lower Penitencia Crk
Survey Start Date: 10/3/00
Investigator: Janell Hillman

Survey Chronology: Post-Project Survey- 2nd Year
Site Type: RS, Excavation Study Site
Vegetation Type: Vegetation Type 4 of 5: Nonnative (Xanthium strumarium)

Relative Cover	Family	Species	Wetland Indicator Status	Origin[1]
>50%	ASTERACEAE	*Xanthium strumarium*	FAC+	E
<20%	ASTERACEAE	*Conyza canadensis*	FAC	N
	ASTERACEAE	*Picris echioides*	FAC	E
	ASTERACEAE	*Gnaphalium luteo-album*	FACW-	E
	ASTERACEAE	*Lactuca serriola*	FAC	E
	CYPERACEAE	*Cyperus eragrostis*	FACW	N
	LYTHRACEAE	*Lythrum californicum*	OBL	N
	ONAGRACEAE	*Epilobium ciliatum ssp. cilatum*	FACW	N
	POACEAE	*Echinochloa crus-galli*	FACW	E
	POACEAE	*Cynodon dactylon*	FAC	E
	POACEAE	*Lolium multiflorum*	NOL	E
	POLYGONACEAE	*Polygonum persicaria*	FACW	E
	SALICACEAE	*Salix laevigata*	NOL	N
	TYPHACEAE	*Typha latifolia*	OBL	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 90

SCVWD Wetland Assessment Checklist

Facility Name: Berryessa Creek
Location: from Calaveras Blvd to Lower Penitencia Crk

Survey Start Date: 10/3/00
Survey End Date: 10/5/00

Survey Chronology: Post-Project Survey- 2nd Year
Site Type: RS, Excavation Study Site
Tidal or Nontidal: Mixed
If nontidal, is water in channel?: Yes

Investigator: Janell Hillman
Station # Start: 0
Station # End: 8600

Map or Photo Used: not applicable
Acreage Estimates Made From: Aerial Photo
Photo Documentation: Digital
Photo Code: 13 J

Notes: Nontidal section of the Excavation Study Site is from Calaveras Blvd. to RR.

Vegetation Type: Vegetation Type 5 of 5: Typha and mixed exotics

Dominance (>50% Relative Cover): NonTidal: bulrush, cattail, burreed or mix

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	51-75%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

Vegetation Type 5 of 5 was weakly dominated by Typha latifolia (20-50% relative cover). Typha angustifolia and Picris echioides were common, with T. angustifolia common enough to result in the site being dominated by Typha. This vegetation type typically occurred above the incised low flow channel and adjacent to Type 1 (Ludwigia-Typha). A mixture of exotic species formed the understory. Total cover was thick and native species relative cover was high (76-100% category for each).

This type was more prevalent d/s of Milpitas Blvd.

Estimated Wetland Amount: 0.46 ac

Code: 90

SCVWD Wetlands Plant List

Facility Name: Berryessa Creek
Location: from Calaveras Blvd to Lower Penitencia Crk
Survey Start Date: 10/3/00
Investigator: Janell Hillman

Survey Chronology: Post-Project Survey- 2nd Year
Site Type: RS, Excavation Study Site
Vegetation Type: Vegetation Type 5 of 5: Typha and mixed exotics

Relative Cover	Family	Species	Wetland Indicator Status	Origin [1]
=20-50%	TYPHACEAE	*Typha latifolia*	OBL	N
<20%	ASTERACEAE	*Conyza canadensis*	FAC	N
	ASTERACEAE	*Picris echioides*	FAC	E
	ASTERACEAE	*Bidens frondosa*	FACW	N
	ASTERACEAE	*Xanthium strumarium*	FAC+	E
	CYPERACEAE	*Cyperus eragrostis*	FACW	N
	LYTHRACEAE	*Lythrum californicum*	OBL	N
	ONAGRACEAE	*Ludwigia peploides ssp. peploides*	OBL	N
	POACEAE	*Echinochloa crus-galli*	FACW	E
	TYPHACEAE	*Typha angustifolia*	OBL	N
	URTICACEAE	*Urtica dioica ssp. holosericea*	FACW	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 90

SCVWD Wetland Assessment Checklist

Facility Name: Berryessa Creek
Location: from Hwy 680 to Montague Expwy

Survey Start Date: 6/15/00
Survey End Date: 6/15/00

Survey Chronology: Post-Project Survey- 2nd Year
Site Type: RS, Excavation Study Site
Tidal or Nontidal: NonTidal
If nontidal, is water in channel?: Yes

Investigator: Janell Hillman
Station # Start: 16700
Station # End: 20200

Map or Photo Used: not applicable
Acreage Estimates Made From: Field Measure
Photo Documentation: Digital
Photo Code: 2J

Dominance (>50% Relative Cover): NonTidal: other native

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	51-75%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

Wetland occurred in the channel in a thin, discontinuous and patchy fringe along the banks and in several in-stream depressions. The channel was mostly dry with a gravel bottom at time of survey, although there were some standing pools of water at the upstream end of the site near Hwy. 680. The bottom of bank was also moist in many places.

Although no one species was dominant in the wetland, Lythrum californicum was common at about 20% relative cover. The site also supported mixed monocots, with such species as Cyperus eragrostis, Agrostis viridis, and Cynodon dactylon. Total vegetative cover was high (close to 100%). Native species relative cover was at the low end of the 51-75% category.

Estimated Wetland Amount: 2999 sq. ft.

Code: 60

SCVWD Wetlands Plant List

Facility Name: Berryessa Creek
Location: from Hwy 680 to Montague Expwy

Survey Start Date: 6/15/00
Investigator: Janell Hillman

Survey Chronology: Post-Project Survey- 2nd Year
Site Type: RS, Excavation Study Site

Relative Cover	Family	Species	Wetland Indicator Status	Origin[1]
=20-50%	LYTHRACEAE	*Lythrum californicum*	OBL	N
<20%	ASTERACEAE	*Xanthium strumarium*	FAC+	E
	BRASSICACEAE	*Rorippa nasturtium-aquaticum*	OBL	N
	CHENOPODIACEAE	*Atriplex triangularis*	FACW	N
	CYPERACEAE	*Cyperus eragrostis*	FACW	N
	FABACEAE	*Medicago polymorpha*	NOL	E
	JUNCACEAE	*Juncus bufonius*	FACW+	N
	JUNCACEAE	*Juncus patens*	FAC	N
	JUNCACEAE	*Juncus xiphioides*	OBL	N
	ONAGRACEAE	*Epilobium ciliatum ssp. cilatum*	FACW	N
	POACEAE	*Echinochloa crus-galli*	FACW	E
	POACEAE	*Cynodon dactylon*	FAC	E
	POACEAE	*Leptochloa fascicularis*	OBL	N
	POACEAE	*Polypogon monspeliensis*	FACW+	E
	POACEAE	*Lolium multiflorum*	NOL	E
	POACEAE	*Digitaria sanguinalis*	FACU	E
	POACEAE	*Agrostis viridis*	OBL	E
	POLYGONACEAE	*Polygonum persicaria*	FACW	E
	POLYGONACEAE	*Polygonum punctatum*	OBL	N
	POLYGONACEAE	*Rumex salicifolius var. transitorius*	OBL	N
	POLYGONACEAE	*Polygonum spp.*	NOL	N
	PORTULACACEAE	*Portulaca oleracea*	FAC	E
	SALICACEAE	*Populus fremontii*	FACW	N
	SALICACEAE	*Salix laevigata*	NOL	N
	TYPHACEAE	*Typha angustifolia*	OBL	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 60

SCVWD Wetland Assessment Checklist

Facility Name: San Tomas Aquino Creek
Location: from Great America Pkwy to u/s of Hetchy Hetchy pipes

Survey Start Date: 8/22/00
Survey End Date: 9/1/00

Survey Chronology: Post-Project Survey- 2nd Year
Site Type: RS, Excavation Study Site
Tidal or Nontidal: Tidal
If nontidal, is water in channel?:

Investigator: Janell Hillman
Station # Start: 5200
Station # End: 10500

Map or Photo Used: not applicable
Acreage Estimates Made From: Aerial Photo
Photo Documentation: Digital
Photo Code: 6J

Vegetation Type: Type 1 of 3

Dominance (>50% Relative Cover): Tidal: California bulrush

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	51-75%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

This vegetation type occurred in the channel on low island-like benches. It was dominated by Scirpus californicus (>50% relative cover), with Polygonum spp. and Ludwigia peploides common as a fringe in between the stands of bulrush. Total cover was high (76-100% category) and native species relative cover was in the 51-75% category.

These in-stream islands were present during last year's surveys (1999); however, the vegetation was not substantially established enough to form a distinct community.

Estimated Wetland Amount: 0.25 ac

Code: 109

SCVWD Wetlands Plant List

Facility Name: San Tomas Aquino Creek
Location: from Great America Pkwy to u/s of Hetchy Hetchy pipes
Survey Start Date: 8/22/00
Investigator: Janell Hillman

Survey Chronology: Post-Project Survey- 2nd Year
Site Type: RS, Excavation Study Site
Vegetation Type: Type 1 of 3

Relative Cover	Family	Species	Wetland Indicator Status	Origin[1]
>50%	CYPERACEAE	*Scirpus californicus*	OBL	N
<20%	APIACEAE	*Foeniculum vulgare*	FACU	E
	ASTERACEAE	*Xanthium strumarium*	FAC+	E
	BRASSICACEAE	*Rorippa nasturtium-aquaticum*	OBL	N
	CHENOPODIACEAE	*Chenopodium ambrosioides*	FAC	E
	CYPERACEAE	*Cyperus eragrostis*	FACW	N
	FABACEAE	*Melilotus alba*	FACU+	E
	ONAGRACEAE	*Ludwigia peploides ssp. peploides*	OBL	N
	POLYGONACEAE	*Rumex crispus*	FACW-	E
	POLYGONACEAE	*Polygonum lapathifolium*	OBL	N
	POLYGONACEAE	*Polygonum persicaria*	FACW	E
	POLYGONACEAE	*Polygonum punctatum*	OBL	N
	URTICACEAE	*Urtica dioica ssp. holosericea*	FACW	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 109

SCVWD Wetland Assessment Checklist

Facility Name: San Tomas Aquino Creek
Location: from Great America Pkwy to u/s of Hetchy Hetchy pipes

Survey Start Date: 8/22/00
Survey End Date: 9/1/00

Survey Chronology: Post-Project Survey- 2nd Year
Site Type: RS, Excavation Study Site
Tidal or Nontidal: Tidal
If nontidal, is water in channel?:

Investigator: Janell Hillman
Station # Start: 5200
Station # End: 10500

Map or Photo Used: not applicable
Acreage Estimates Made From: Aerial Photo
Photo Documentation: Digital
Photo Code: 6J

Vegetation Type: Type 2 of 3

Dominance (>50% Relative Cover): Tidal: other native

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	51-75%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

This vegetation type was prevalent on banks at the edges of and above the channel. It was also found on low bars which were common in the stream bed upstream of Great America Amusement Park. Some of the wetland along the banks formed only a thin fringe due to the steep nature of the topography, which in some areas precludes the establishment of wetland vegetation altogether.

Vegetation Type 2 was dominated by Polygonum spp. (>50% relative cover); especially Polygonum punctatum and P. persicaria. However, it was a mixed vegetation community and contained many other species as well, such as Cyperus eragrostis, Euthamia occidentalis and Echinochloa crus-galli (found slightly higher up on the banks). Total cover was thick (about 100%) and native species relative cover was between 51-75%.

Estimated Wetland Amount: 1.33 ac

Code: 109

SCVWD Wetlands Plant List

Facility Name: San Tomas Aquino Creek
Location: from Great America Pkwy to u/s of Hetchy Hetchy pipes
Survey Start Date: 8/22/00
Investigator: Janell Hillman

Survey Chronology: Post-Project Survey- 2nd Year
Site Type: RS, Excavation Study Site
Vegetation Type: Type 2 of 3

Relative Cover	Family	Species	Wetland Indicator Status	Origin [1]
=20-50%	POLYGONACEAE	*Polygonum persicaria*	FACW	E
	POLYGONACEAE	*Polygonum punctatum*	OBL	N
<20%	ASTERACEAE	*Euthamia occidentalis*	OBL	N
	ASTERACEAE	*Xanthium strumarium*	FAC+	E
	BRASSICACEAE	*Lepidium latifolium*	FACW	I
	CYPERACEAE	*Cyperus eragrostis*	FACW	N
	LYTHRACEAE	*Lythrum californicum*	OBL	N
	ONAGRACEAE	*Epilobium ciliatum ssp. cilatum*	FACW	N
	POACEAE	*Echinochloa crus-galli*	FACW	E
	POACEAE	*Piptatherum miliaceum*	NOL	E
	POACEAE	*Polypogon monspeliensis*	FACW+	E
	POACEAE	*Agrostis viridis*	OBL	E
	POLYGONACEAE	*Rumex crispus*	FACW-	E
	TYPHACEAE	*Typha sp.*	OBL	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 109

SCVWD Wetland Assessment Checklist

Facility Name: San Tomas Aquino Creek
Location: from Great America Pkwy to u/s of Hetchy Hetchy pipes

Survey Start Date: 8/22/00
Survey End Date: 9/1/00

Survey Chronology: Post-Project Survey- 2nd Year
Site Type: RS, Excavation Study Site
Tidal or Nontidal: Tidal
If nontidal, is water in channel?:

Investigator: Janell Hillman
Station # Start: 5200
Station # End: 10500

Map or Photo Used: not applicable
Acreage Estimates Made From: Aerial Photo
Photo Documentation: Digital
Photo Code: 6J

Vegetation Type: Type 3 of 3

Dominance (>50% Relative Cover): Tidal: non-native

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	26-50%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

Vegetation Type 3 was found in only one area on this section of San Tomas Creek: on a low, wide bar upstream of Great America Parkway. It was dominated by Echinochloa crus-galli (>50% relative cover), with Polygonum spp. (P. punctatum and P. persicaria) occurring as a subdominant category (20-50% relative cover combined). Total cover was quite thick (100%), while native species relative cover was low (26-50%). Soil was saturated and gritty-textured, with some clay.

From afar this bench looked like a sea of thick, green grass due to the height and thickness of the Echinochloa. In previous years, this low bar was dominated by low-stature herbaceous wetland species such as Polygonum, Chenopodium, and Ludwigia, which occurred rather sparsely on the site amidst areas of unvegetated mud flat.

Estimated Wetland Amount: 0.34 ac

Code: 109

SCVWD Wetlands Plant List

Facility Name: San Tomas Aquino Creek
Location: from Great America Pkwy to u/s of Hetchy Hetchy pipes
Survey Start Date: 8/22/00
Investigator: Janell Hillman

Survey Chronology: Post-Project Survey- 2nd Year
Site Type: RS, Excavation Study Site
Vegetation Type: Type 3 of 3

Relative Cover	Family	Species	Wetland Indicator Status	Origin[1]
>50%	POACEAE	*Echinochloa crus-galli*	FACW	E
=20-50%	POLYGONACEAE	*Polygonum spp.*	NOL	N
<20%	ASTERACEAE	*Bidens frondosa*	FACW	N
	ASTERACEAE	*Euthamia occidentalis*	OBL	N
	CYPERACEAE	*Scirpus californicus*	OBL	N
	CYPERACEAE	*Scirpus robustus*	OBL	N
	ONAGRACEAE	*Epilobium ciliatum ssp. cilatum*	FACW	N
	ONAGRACEAE	*Ludwigia peploides ssp. peploides*	OBL	N
	POLYGONACEAE	*Polygonum lapathifolium*	OBL	N
	POLYGONACEAE	*Polygonum persicaria*	FACW	E
	POLYGONACEAE	*Polygonum punctatum*	OBL	N
	TYPHACEAE	*Typha sp.*	OBL	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 109

SCVWD Wetland Assessment Checklist

Facility Name: Sunnyvale East Channel
Location: from Hwy 237 to Caribbean Dr

Survey Start Date: 9/11/00
Survey End Date: 9/11/00

Survey Chronology: Post-Project Survey- 2nd Year
Site Type: RS, Excavation Study Site
Tidal or Nontidal: Tidal
If nontidal, is water in channel?:

Investigator: Janell Hillman
Station # Start: 2300
Station # End: 6000

Map or Photo Used: not applicable
Acreage Estimates Made From: Aerial Photo
Photo Documentation: Digital
Photo Code: 7J

Dominance (>50% Relative Cover): Tidal: other native

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	51-75%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

The east bank of this section of Sunnyvale East comprises the Excavation Study Site. Wetland occurred only sporadically as a thin fringe from one to several feet wide. This is most likely due to the steepness of the bank slope, which does not provide much substrate for wetland vegetation establishment.

The patchy wetland which was present was co-dominated by Rorippa nasturtium-aquaticum and Polygonum punctatum (each with 20-50% relative cover). Total cover was about 95%. Native species relative cover was between 51-75%.

Estimated Wetland Amount: 0.07 ac

Code: 70

SCVWD Wetlands Plant List

Facility Name: Sunnyvale East Channel
Location: from Hwy 237 to Caribbean Dr

Survey Start Date: 9/11/00
Investigator: Janell Hillman

Survey Chronology: Post-Project Survey- 2nd Year
Site Type: RS, Excavation Study Site

Relative Cover	Family	Species	Wetland Indicator Status	Origin[1]
=20-50%	BRASSICACEAE	*Rorippa nasturtium-aquaticum*	OBL	N
	POLYGONACEAE	*Polygonum punctatum*	OBL	N
<20%	APIACEAE	*Foeniculum vulgare*	FACU	E
	BRASSICACEAE	*Lepidium latifolium*	FACW	I
	CYPERACEAE	*Cyperus eragrostis*	FACW	N
	CYPERACEAE	*Scirpus pungens*	OBL	N
	CYPERACEAE	*Scirpus robustus*	OBL	N
	ONAGRACEAE	*Ludwigia peploides ssp. peploides*	OBL	N
	POACEAE	*Echinochloa crus-galli*	FACW	E

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 70

APPENDIX C
Adjacent Reference Site Checklists

SCVWD Wetland Assessment Checklist

Facility Name: Berryessa Creek
Location: from Hwy 237 (Calaveras Blvd) to Los Coches Ave

Survey Start Date: 10/3/00
Survey End Date: 10/3/00

Survey Chronology: Post-Project Survey- 2nd Year
Site Type: RS, Adjacent Reference Site
Tidal or Nontidal: NonTidal
If nontidal, is water in channel?: Yes

Investigator: Janell Hillman
Station # Start: 8800
Station # End: 9300

Map or Photo Used: not applicable
Acreage Estimates Made From: Aerial Photo
Photo Documentation: Digital
Photo Code: 12J

Vegetation Type: Type 1 of 2: High wetland

Dominance (>50% Relative Cover): NonTidal: other native

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	51-75%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

This section of Berryessa Creek contained two wetland vegetation types. One type existed on an elevated berm/slope and contained a mix of exotic and native species, while the other type was found throughout the site at the edges of the low flow channel on saturated soils and was vegetated with low-growing herbaceous wetland species.

Vegetation Type 1 of 2 was dominated by Equisetum arvense (>50% relative cover), which grew thickly on a bar above the channel, located at the upstream end of the site near the Los Coches St. bridge. Soil was moist and sandy. Picris echioides occurred as a sub-dominant (20-50% relative cover). Total cover was high. Native species relative cover was between 51-75%, mostly due to the abundance of Equisetum. This area appears to be innundated by a "tributary" or diversion channel which flows into Berryessa Creek at the Los Coches St. bridge.

Some of the "high wetland" of last year was delineated as "low wetland" this year based on topography, hydrology, and associated species. The previous "high wetland" this year is classified as "low wetland" since it occurs on topography that is more or less at the same elevation as the low flow channel; the soil is moist and cobbled rather than sandy as on the berm; and there are more wetland natives in the species composition than are present in the high wetland.

Estimated Wetland Amount: 0.04 ac

Code: 87

SCVWD Wetlands Plant List

Facility Name: Berryessa Creek
Location: from Hwy 237 (Calaveras Blvd) to Los Coches Ave
Survey Start Date: 10/3/00
Investigator: Janell Hillman

Survey Chronology: Post-Project Survey- 2nd Year
Site Type: RS, Adjacent Reference Site
Vegetation Type: Type 1 of 2: High wetland

Relative Cover	Family	Species	Wetland Indicator Status	Origin [1]
>50%	EQUISETACEAE	*Equisetum arvense*	FAC	N
=20-50%	ASTERACEAE	*Picris echioides*	FAC	E
<20%	CYPERACEAE	*Cyperus eragrostis*	FACW	N
	EUPHORBIACEAE	*Ricinis communis*	FACU	E
	LYTHRACEAE	*Lythrum californicum*	OBL	N
	POACEAE	*Phalaris aquatica*	FAC+	E
	POACEAE	*Echinochloa crus-galli*	FACW	E
	POACEAE	*Piptatherum miliaceum*	NOL	E
	POACEAE	*Polypogon monspeliensis*	FACW+	E
	POACEAE	*Agrostis viridis*	OBL	E

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 87

SCVWD Wetland Assessment Checklist

Facility Name: Berryessa Creek
Location: from Hwy 237 (Calaveras Blvd) to Los Coches Ave

Survey Start Date: 10/3/00
Survey End Date: 10/3/00

Survey Chronology: Post-Project Survey- 2nd Year
Site Type: RS, Adjacent Reference Site
Tidal or Nontidal: NonTidal
If nontidal, is water in channel?: Yes

Investigator: Janell Hillman
Station # Start: 8800
Station # End: 9300

Map or Photo Used: not applicable
Acreage Estimates Made From: Aerial Photo
Photo Documentation: Digital
Photo Code: 12J

Vegetation Type: Type 2 of 2: Low wetland

Dominance (>50% Relative Cover): NonTidal: other native

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	76-100%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

Vegetation Type 2 of 2 was co-dominated by Rorippa nasturtium-aquaticum, Ludwigia peploides, and Echinochloa crus-galli (20-50% relative cover of each). This type was found at the edges of the low flow channel which meandered through the site, as well as on low, saturated, cobbled bars at a slightly higher elevation than the center channel. Total cover was around 90%. Native species relative cover was within the lower end of the 76-100% category.

Estimated Wetland Amount: 0.13 ac

Code: 87

SCVWD Wetlands Plant List

Facility Name: Berryessa Creek
Location: from Hwy 237 (Calaveras Blvd) to Los Coches Ave
Survey Start Date: 10/3/00
Investigator: Janell Hillman

Survey Chronology: Post-Project Survey- 2nd Year
Site Type: RS, Adjacent Reference Site
Vegetation Type: Type 2 of 2: Low wetland

Relative Cover	Family	Species	Wetland Indicator Status	Origin [1]
=20-50%	BRASSICACEAE	*Rorippa nasturtium-aquaticum*	OBL	N
	ONAGRACEAE	*Ludwigia peploides ssp. peploides*	OBL	N
	POACEAE	*Echinochloa crus-galli*	FACW	E
<20%	APIACEAE	*Foeniculum vulgare*	FACU	E
	ASTERACEAE	*Picris echioides*	FAC	E
	ASTERACEAE	*Xanthium strumarium*	FAC+	E
	ASTERACEAE	*Aster subulatus var. ligulatus*	FACW	N
	CYPERACEAE	*Cyperus eragrostis*	FACW	N
	EQUISETACEAE	*Equisetum arvense*	FAC	N
	EUPHORBIACEAE	*Ricinis communis*	FACU	E
	LYTHRACEAE	*Lythrum californicum*	OBL	N
	ONAGRACEAE	*Epilobium ciliatum ssp. cilatum*	FACW	N
	POACEAE	*Paspalum distichum*	OBL	N
	POACEAE	*Leptochloa fascicularis*	OBL	N
	POACEAE	*Polypogon monspeliensis*	FACW+	E
	POACEAE	*Lolium multiflorum*	NOL	E
	POACEAE	*Agrostis viridis*	OBL	E
	POLYGONACEAE	*Polygonum lapathifolium*	OBL	N
	POLYGONACEAE	*Polygonum persicaria*	FACW	E
	POLYGONACEAE	*Polygonum punctatum*	OBL	N
	SALICACEAE	*Salix laevigata*	NOL	N
	SCROPHULARIACEAE	*Veronica anagallis-aquatica*	OBL	E
	TYPHACEAE	*Typha sp.*	OBL	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 87

SCVWD Wetland Assessment Checklist

Facility Name: Jones Creek
Location: from 930 ft to 1860 ft d/s Hwy 152

Survey Start Date: 9/26/00
Survey End Date: 9/26/00

Survey Chronology: Post-Project Survey- 3rd Year
Site Type: RS, Adjacent Reference Site
Tidal or Nontidal: NonTidal
If nontidal, is water in channel?: No

Investigator: Janell Hillman
Station # Start: 11740
Station # End: 12670

Map or Photo Used: not applicable
Acreage Estimates Made From: Field Measure
Photo Documentation: Digital
Photo Code: 11J

Vegetation Type: Vegetation Type 1 of 2: Typha

Dominance (>50% Relative Cover): NonTidal: bulrush, cattail, burreed or mix

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	76-100%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

This section of Jones Creek contained two wetland vegetation types, which alternately dominated the channel. In addition, several sections of the creek were overshadowed by mature willows growing in the channel and on the banks. Due to shading of the channel, wetland was not found in these riparian areas.

Vegetation Type 1 of 2 was dominated by Typha latifolia (>50% relative cover). Total cover was very high, as the Typha grew thickly in the channel and very few other species were present except at the upper wetland fringe along the banks. Native species relative cover was in the 76-100% category. Soil was moist but with no standing water. This type also contained a single patch of Scirpus californicus (about 600 sq. ft).

In general, the reference area looked "greener" and more moist than the Excavation Study Site, in which the channel was completely dry.

Estimated Wetland Amount: 6218 sq. ft (0.14 ac)

Code: 84

SCVWD Wetlands Plant List

Facility Name: Jones Creek
Location: from 930 ft to 1860 ft d/s Hwy 152

Survey Start Date: 9/26/00
Investigator: Janell Hillman

Survey Chronology: Post-Project Survey- 3rd Year
Site Type: RS, Adjacent Reference Site
Vegetation Type: Vegetation Type 1 of 2: Typha

Relative Cover	Family	Species	Wetland Indicator Status	Origin [1]
>50%	TYPHACEAE	*Typha latifolia*	OBL	N
<20%	APIACEAE	*Cicuta sp.*	NOL	N
	CYPERACEAE	*Scirpus californicus*	OBL	N
	POLYGONACEAE	*Polygonum punctatum*	OBL	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

SCVWD Wetland Assessment Checklist

Facility Name: Jones Creek
Location: from 930 ft to 1860 ft d/s Hwy 152

Survey Start Date: 9/26/00
Survey End Date: 9/26/00

Survey Chronology: Post-Project Survey- 3rd Year
Site Type: RS, Adjacent Reference Site
Tidal or Nontidal: NonTidal
If nontidal, is water in channel?: No

Investigator: Janell Hillman
Station # Start: 11740
Station # End: 12670

Map or Photo Used: not applicable
Acreage Estimates Made From: Field Measure
Photo Documentation: Digital
Photo Code: 11J

Vegetation Type: Vegetation Type 2 of 2: Polygonum mix

Dominance (>50% Relative Cover): NonTidal: other native

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	76-100%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

Vegetation Type 2 of 2 was dominated by Polygonum punctatum (>50% relative cover). This community was more mixed than the other types, with Atriplex triangularis common and one area in which Scirpus maritimus was concentrated. Low-growing herbaceous vegetation predominated. Total cover was thick. Native species relative cover was at the low end of the 76-100% category. Soil was moist and cracked but with no standing water.

Estimated Wetland Amount: 5898 sq. ft. (0.14 ac)

Code: 84

SCVWD Wetlands Plant List

Facility Name: Jones Creek
Location: from 930 ft to 1860 ft d/s Hwy 152
Survey Start Date: 9/26/00
Investigator: Janell Hillman

Survey Chronology: Post-Project Survey- 3rd Year
Site Type: RS, Adjacent Reference Site
Vegetation Type: Vegetation Type 2 of 2: Polygonum mix

Relative Cover	Family	Species	Wetland Indicator Status	Origin [1]
>50%	POLYGONACEAE	*Polygonum punctatum*	OBL	N
<20%	APIACEAE	*Conium maculatum*	FACW	E
	ASTERACEAE	*Picris echioides*	FAC	E
	CHENOPODIACEAE	*Atriplex triangularis*	FACW	N
	CYPERACEAE	*Cyperus eragrostis*	FACW	N
	CYPERACEAE	*Scirpus maritimus*	OBL	N
	LAMIACEAE	*Mentha arvensis*	FACW	E
	ONAGRACEAE	*Epilobium ciliatum ssp. cilatum*	FACW	N
	POACEAE	*Sorghum bicolor*	FAC	E
	POLYGONACEAE	*Rumex salicifolius var. transitorius*	OBL	N
	POLYGONACEAE	*Polygonum spp.*	NOL	N
	TYPHACEAE	*Typha latifolia*	OBL	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

SCVWD Wetland Assessment Checklist

Facility Name: Lower Penitencia Creek
Location: from Milmont Dr. d/s approx. 1900 ft

Survey Start Date: 10/13/00
Survey End Date: 10/13/00

Survey Chronology: Post-Project Survey- 3rd Year
Site Type: RS, Adjacent Reference Site
Tidal or Nontidal: Tidal
If nontidal, is water in channel?:

Investigator: Janell Hillman
Station # Start: 2050
Station # End: 4000

Map or Photo Used: not applicable
Acreage Estimates Made From: Aerial Photo
Photo Documentation: Digital
Photo Code: Gale's digital camera

Dominance (>50% Relative Cover): Tidal: California bulrush

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	76-100%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

This section of Lower Penitenica (east channel; reference site) was dominated by Scirpus californicus (>50% relative cover). Typha latifolia and T. angustifolia were very common (20-50% relative cover combined). The wetland existed along the bank margins, with Scirpus typically found along the water's edge and Typha found on the benches and adjacent to the upland boundary. Scirpus maritimus was common at the downstream end of the study site. The central low flow channel was unvegetated and had flowing water at the time of survey. Total cover was thick (76-100%). Native species relative cover was at the lower end of the 76-100% category due to the presence of non-native species such as Xanthium strumarium, Picris echiodies, and Cynodon dactylon.

There were quite a few young willow trees growing along the bank margins (similar to the adjacent excavation site).

The reference site on Lower Penitencia contained more of a mixed wetland than the excavation site. There was more Typha present, rather than the thick, fairly monospecific stands of Scirpus that dominated the entire channel of the excavation site. The channel of the reference site is wider than that of the excavation site, and could account for the lack of toe-to-toe wetland there.

Estimated Wetland Amount: 2.11 ac

Code: 95

SCVWD Wetlands Plant List

Facility Name: Lower Penitencia Creek
Location: from Milmont Dr. d/s approx. 1900 ft

Survey Start Date: 10/13/00
Investigator: Janell Hillman

Survey Chronology: Post-Project Survey- 3rd Year
Site Type: RS, Adjacent Reference Site

Relative Cover	Family	Species	Wetland Indicator Status	Origin[1]
>50%	CYPERACEAE	*Scirpus californicus*	OBL	N
=20-50%	TYPHACEAE	*Typha angustifolia*	OBL	N
	TYPHACEAE	*Typha latifolia*	OBL	N
<20%	APIACEAE	*Conium maculatum*	FACW	E
	ASTERACEAE	*Baccharis douglasii*	OBL	N
	ASTERACEAE	*Picris echioides*	FAC	E
	ASTERACEAE	*Xanthium strumarium*	FAC+	E
	BETULACEAE	*Alnus rhombifolia*	FACW	N
	BRASSICACEAE	*Lepidium latifolium*	FACW	I
	CAPRIFOLIACEAE	*Sambucus mexicana*	FAC	N
	CHENOPODIACEAE	*Atriplex triangularis*	FACW	N
	CYPERACEAE	*Cyperus eragrostis*	FACW	N
	CYPERACEAE	*Scirpus maritimus*	OBL	N
	LAMIACEAE	*Mentha sp.*	NOL	UNK
	LAMIACEAE	*Mentha x piperita*	OBL	E
	ONAGRACEAE	*Epilobium ciliatum ssp. cilatum*	FACW	N
	PLATANACEAE	*Platanus racemosa*	FACW	N
	POACEAE	*Cynodon dactylon*	FAC	E
	POLYGONACEAE	*Rumex crispus*	FACW-	E
	POLYGONACEAE	*Polygonum lapathifolium*	OBL	N
	POLYGONACEAE	*Polygonum persicaria*	FACW	E
	SALICACEAE	*Populus fremontii*	FACW	N
	SALICACEAE	*Salix laevigata*	NOL	N
	SALICACEAE	*Salix lasiolepis*	FACW	N
	SOLANACEAE	*Solanum sp.*	NOL	E
	URTICACEAE	*Urtica dioica ssp. holosericea*	FACW	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 95

SCVWD Wetland Assessment Checklist

Facility Name: Lions Creek
Location: from Kern Ave d/s 1000 ft

Survey Start Date: 9/25/00
Survey End Date: 9/25/00

Survey Chronology: Post-Project Survey- 3rd Year
Site Type: RS, Adjacent Reference Site
Tidal or Nontidal: NonTidal
If nontidal, is water in channel?: Yes

Investigator: Janell Hillman
Station # Start: 1200
Station # End: 2200

Map or Photo Used: not applicable
Acreage Estimates Made From: Field Measure
Photo Documentation: Digital
Photo Code: 10J

Dominance (>50% Relative Cover):

NonTidal: bulrush, cattail, burreed or mix

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	76-100%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

This section of Lions Creek forms a mixed community co-dominated by Typha angustifolia and T. latfifolia (each with 20-50% relative cover), and Ludwigia peploides and Cyperus eragrostis (20-50% relative cover combined). As seen last year, the Typha community makes up about 75% of the site, with patches of Ludwigia occasional in the center channel fringed by Cyperus eragrostis. Total cover was high. Native species relative cover was at the low end of the76-100% category, with the area directly upstream of the Kern Ave. bridge the most weedy section. The rocked concrete apron at the bridge precludes any vegetation establishment for the first 20 feet of the sample site. Areas of open water (visible near the bridge) were still and stagnant.

Estimated Wetland Amount:

24100 sq. ft (0.55 ac)

Code: 82

SCVWD Wetlands Plant List

Facility Name: Lions Creek
Location: from Kern Ave d/s 1000 ft

Survey Start Date: 9/25/00
Investigator: Janell Hillman

Survey Chronology: Post-Project Survey- 3rd Year
Site Type: RS, Adjacent Reference Site

Relative Cover	Family	Species	Wetland Indicator Status	Origin[1]
=20-50%	TYPHACEAE	*Typha angustifolia*	OBL	N
	TYPHACEAE	*Typha latifolia*	OBL	N
<20%	ASTERACEAE	*Xanthium strumarium*	FAC+	E
	BRASSICACEAE	*Lepidium latifolium*	FACW	I
	CYPERACEAE	*Cyperus eragrostis*	FACW	N
	FABACEAE	*Melilotus alba*	FACU+	E
	ONAGRACEAE	*Epilobium ciliatum ssp. cilatum*	FACW	N
	ONAGRACEAE	*Ludwigia peploides ssp. peploides*	OBL	N
	POACEAE	*Paspalum dilatatum*	FAC	E
	POACEAE	*Paspalum distichum*	OBL	N
	POACEAE	*Polypogon monspeliensis*	FACW+	E
	POLYGONACEAE	*Rumex crispus*	FACW-	E
	POLYGONACEAE	*Polygonum punctatum*	OBL	N
	SALICACEAE	*Salix lasiolepis*	FACW	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 82

SCVWD Wetland Assessment Checklist

Facility Name: San Tomas Aquino Creek
Location: from Hwy 237 d/s approx. 800 ft to bend

Survey Start Date: 9/19/00
Survey End Date: 9/19/00

Survey Chronology: Post-Project Survey- 3rd Year
Site Type: RS, Adjacent Reference Site
Tidal or Nontidal: Tidal
If nontidal, is water in channel?:

Investigator: Janell Hillman
Station # Start: 1700
Station # End: 2500

Map or Photo Used: not applicable
Acreage Estimates Made From: Aerial Photo
Photo Documentation: Digital
Photo Code: 9J

Vegetation Type: Type 1a: Typha dominated

Dominance (>50% Relative Cover): Tidal: cattail

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	76-100%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

There were two vegetation types found in the adjacent reference site on San Tomas downstream of Hwy 237. Vegetation Type 1a was dominated by Typha angustifolia (>50% relative cover), with Scirpus californicus occurring as a sub-dominant (20-50% relative cover). It was found on both the low, wide benches lining each side of the low flow channel. The Typha was found continuously across the site, while Scirpus fringed the edges of the low flow channel.

Total cover was very thick and almost impenetrable due to the cattail biomass. Native species relative cover was high (76-100%). This vegetation type was fairly monospecific, in contrast to Vegetation Type 2a (see corresponding survey write-up). There were occasional patches of the invasive exotic species Arundo donax and Lepidium latifolium. The Lepidium was mainly confined to the edges of the wetland adjacent to the levy.

Estimated Wetland Amount: 1.48 ac

Code: 72

SCVWD Wetlands Plant List

Facility Name: San Tomas Aquino Creek
Location: from Hwy 237 d/s approx. 800 ft to bend

Survey Start Date: 9/19/00
Investigator: Janell Hillman

Survey Chronology: Post-Project Survey- 3rd Year
Site Type: RS, Adjacent Reference Site
Vegetation Type: Type 1a: Typha dominated

Relative Cover	Family	Species	Wetland Indicator Status	Origin[1]
>50%	TYPHACEAE	*Typha angustifolia*	OBL	N
=20-50%	CYPERACEAE	*Scirpus californicus*	OBL	N
<20%	ACERACEAE	*Acer negundo var. californicum*	FACW	N
	ASTERACEAE	*Euthamia occidentalis*	OBL	N
	BRASSICACEAE	*Lepidium latifolium*	FACW	I
	BRASSICACEAE	*Rorippa nasturtium-aquaticum*	OBL	N
	LAMIACEAE	*Mentha spicata*	OBL	E
	ONAGRACEAE	*Epilobium ciliatum ssp. ciliatum*	FACW	N
	POACEAE	*Arundo donax*	FACW	I
	POLYGONACEAE	*Rumex crispus*	FACW-	E
	POLYGONACEAE	*Polygonum punctatum*	OBL	N
	SALICACEAE	*Salix laevigata*	NOL	N
	SALICACEAE	*Salix lasiolepis*	FACW	N
	TYPHACEAE	*Typha latifolia*	OBL	N
	URTICACEAE	*Urtica dioica ssp. holosericea*	FACW	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 72

SCVWD Wetland Assessment Checklist

Facility Name: San Tomas Aquino Creek
Location: from Hwy 237 d/s approx. 800 ft to bend

Survey Start Date: 9/19/00
Survey End Date: 9/19/00

Survey Chronology: Post-Project Survey- 3rd Year
Site Type: RS, Adjacent Reference Site
Tidal or Nontidal: Tidal
If nontidal, is water in channel?:

Investigator: Janell Hillman
Station # Start: 1700
Station # End: 2500

Map or Photo Used: not applicable
Acreage Estimates Made From: Aerial Photo
Photo Documentation: Digital
Photo Code: 9J

Vegetation Type: Type 2a: mixed high marsh

Dominance (>50% Relative Cover): Tidal: other native

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	51-75%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

There were two vegetation types found in the adjacent reference site on San Tomas downstream of Hwy 237. Vegetation Type 2a was a mixed high marsh dominated by Leymus triticoides (>50% relative cover), with Euthamia occidentalis also common (20-50% relative cover). Type 2a occurred as a patches within the cattail-dominated Vegetation Type 1a matrix (see previous assessment) and was confined to the low, wide bench along the right bank. Total cover was extremely thick and matted due to the biomass of Leymus, a rhizomatous native grass. Underneath, soil was moist and topography was varied, with higher elevation areas supporting the high marsh vegetation. Native species relative cover was between 51-75%. Non-native species present included Mentha spp., Arundo donax, and Picris echioides. In general, this vegetation type was more diverse than Type 1a.

It appears that the mixed high marsh vegetation type has increased in area since last year, although it still comprises less than 20% of the site. Another possibility is that better aerial photo quality allowed more accurate mapping this year.

Estimated Wetland Amount: 0.25 ac

Code: 72

SCVWD Wetlands Plant List

Facility Name: San Tomas Aquino Creek
Location: from Hwy 237 d/s approx. 800 ft to bend

Survey Start Date: 9/19/00
Investigator: Janell Hillman

Survey Chronology: Post-Project Survey- 3rd Year
Site Type: RS, Adjacent Reference Site
Vegetation Type: Type 2a: mixed high marsh

Relative Cover	Family	Species	Wetland Indicator Status	Origin[1]
>50%	POACEAE	*Leymus triticoides*	FAC	N
=20-50%	ASTERACEAE	*Euthamia occidentalis*	OBL	N
<20%	APIACEAE	*Foeniculum vulgare*	FACU	E
	ASTERACEAE	*Picris echioides*	FAC	E
	ASTERACEAE	*Achillea millefolium*	FACU	N
	BRASSICACEAE	*Lepidium latifolium*	FACW	I
	CHENOPODIACEAE	*Chenopodium ambrosioides*	FAC	E
	CHENOPODIACEAE	*Atriplex triangularis*	FACW	N
	CYPERACEAE	*Scirpus robustus*	OBL	N
	FABACEAE	*Melilotus alba*	FACU+	E
	LAMIACEAE	*Mentha pulegium*	OBL	E
	LAMIACEAE	*Mentha spicata*	OBL	E
	ONAGRACEAE	*Ludwigia peploides ssp. peploides*	OBL	N
	POACEAE	*Echinochloa crus-galli*	FACW	E
	POACEAE	*Arundo donax*	FACW	I
	POLYGONACEAE	*Rumex crispus*	FACW-	E
	POLYGONACEAE	*Polygonum lapathifolium*	OBL	N
	POLYGONACEAE	*Polygonum punctatum*	OBL	N
	SALICACEAE	*Salix lasiolepis*	FACW	N
	SOLANACEAE	*Solanum sp.*	NOL	E
	TYPHACEAE	*Typha angustifolia*	OBL	N
	URTICACEAE	*Urtica dioica ssp. holosericea*	FACW	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 72

SCVWD Wetland Assessment Checklist

Facility Name: Saratoga Creek
Location: from Warburton to 120 ft d/s El Camino

Survey Start Date: 9/7/00
Survey End Date: 9/7/00

Survey Chronology:
Site Type: RS, Adjacent Reference Site
Tidal or Nontidal: NonTidal
If nontidal, is water in channel?: Yes

Investigator: Janell Hillman
Station # Start: 3300
Station # End: 4320

Map or Photo Used: not applicable
Acreage Estimates Made From: Aerial Photo
Photo Documentation: Digital
Photo Code: 7J

Dominance (>50% Relative Cover): NonTidal: other native

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	76-100%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

This section of Saratoga Creek was vegetated toe-to-toe with Ludwigia peploides and Rorippa nasturtium-aquaticum (each with 20-50% relative cover). Polygonum spp. (such as P. persicaria and P. lapathifolium) were common, as was Veronica anagallis-aquatica. Total cover was 100%. Native species relative cover also was quite high. There was about 6 to 8 inches of water in the channel at time of survey. The substrate was cobbly. There were occasional clusters of cattail present in the wetland, but in very low abundance.

Estimated Wetland Amount: 0.74 ac

Code: 68

SCVWD Wetlands Plant List

Facility Name: Saratoga Creek
Location: from Warburton to 120 ft d/s El Camino
Survey Start Date: 9/7/00
Investigator: Janell Hillman

Survey Chronology:
Site Type: RS, Adjacent Reference Site

Relative Cover	Family	Species	Wetland Indicator Status	Origin [1]
=20-50%	BRASSICACEAE	*Rorippa nasturtium-aquaticum*	OBL	N
	ONAGRACEAE	*Ludwigia peploides ssp. peploides*	OBL	N
<20%	ASTERACEAE	*Picris echioides*	FAC	E
	ASTERACEAE	*Bidens frondosa*	FACW	N
	ASTERACEAE	*Xanthium strumarium*	FAC+	E
	CHENOPODIACEAE	*Chenopodium ambrosioides*	FAC	E
	CHENOPODIACEAE	*Atriplex triangularis*	FACW	N
	CYPERACEAE	*Cyperus eragrostis*	FACW	N
	LAMIACEAE	*Mentha sp.*	NOL	UNK
	ONAGRACEAE	*Epilobium ciliatum ssp. cilatum*	FACW	N
	PLATANACEAE	*Platanus racemosa*	FACW	N
	POACEAE	*Echinochloa crus-galli*	FACW	E
	POACEAE	*Paspalum distichum*	OBL	N
	POACEAE	*Polypogon monspeliensis*	FACW+	E
	POACEAE	*Agrostis viridis*	OBL	E
	POLYGONACEAE	*Polygonum lapathifolium*	OBL	N
	POLYGONACEAE	*Polygonum persicaria*	FACW	E
	POLYGONACEAE	*Polygonum punctatum*	OBL	N
	SALICACEAE	*Salix lasiolepis*	FACW	N
	SCROPHULARIACEAE	*Veronica anagallis-aquatica*	OBL	E
	TYPHACEAE	*Typha angustifolia*	OBL	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 68

SCVWD Wetland Assessment Checklist

Facility Name: South Morey Channel
Location: from 830 ft to 1660 ft d/s Santa Theresa Blvd

Survey Start Date: 9/25/00
Survey End Date: 9/25/00

Survey Chronology: Post-Project Survey- 3rd Year
Site Type: RS, Adjacent Reference Site
Tidal or Nontidal: NonTidal
If nontidal, is water in channel?: Yes

Investigator: Janell Hillman
Station # Start: 1858
Station # End: 1688

Map or Photo Used: not applicable
Acreage Estimates Made From: Field Measure
Photo Documentation: Digital
Photo Code: 10J

Dominance (>50% Relative Cover): NonTidal: bulrush, cattail, burreed or mix

Vegetation Quality Indicators:

Total % Cover:	51-75%
Native Species Relative % Cover:	76-100%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

This section of South Morey Channel was dominated by Typha angustifolia (>50% relative cover). Typha latifolia was found in the channel in lower quanities, as was Scirpus californicus. The Scirpus formed one clump and then occurred sporadically in the study site. Total cover was thinner than last year (about 75%). A meandering center channel was visible through the Typha . Other species which occurred in the site in low abundance included Polygonum punctatum, Epilobium ciliatum, Cyperus eragrostis, and Paspalum dilatatum. Native species relative cover was still high (76-100% category).

In contrast to last year, Typha angustifolia is more abundant than T. latifolia. However, Typha in general seems to be less dominant in the vegetation community, with other species present in greater numbers than seen in previous years. This could be due to the thinning of the stands of Typha which is evident but not explained. There were some cut stalks visible in the channel and it is possible that vegetation management crews had been in the channel thinning the vegetation by hand.

Bridge construction which occurred last year does not appear to have had any lasting effects on wetland vegetation in the reference site on South Morey Channel.

Estimated Wetland Amount: 14982 sq. ft. (0.34 ac)

Code: 81

SCVWD Wetlands Plant List

Facility Name: South Morey Channel
Location: from 830 ft to 1660 ft d/s Santa Theresa Blvd
Survey Start Date: 9/25/00
Investigator: Janell Hillman

Survey Chronology: Post-Project Survey- 3rd Year
Site Type: RS, Adjacent Reference Site

Relative Cover	Family	Species	Wetland Indicator Status	Origin [1]
>50%	TYPHACEAE	*Typha angustifolia*	OBL	N
<20%	ASTERACEAE	*Picris echioides*	FAC	E
	ASTERACEAE	*Lactuca serriola*	FAC	E
	CYPERACEAE	*Scirpus californicus*	OBL	N
	CYPERACEAE	*Cyperus eragrostis*	FACW	N
	ONAGRACEAE	*Epilobium ciliatum ssp. cilatum*	FACW	N
	ONAGRACEAE	*Ludwigia peploides ssp. peploides*	OBL	N
	POACEAE	*Paspalum dilatatum*	FAC	E
	POLYGONACEAE	*Rumex crispus*	FACW-	E
	POLYGONACEAE	*Polygonum lapathifolium*	OBL	N
	POLYGONACEAE	*Polygonum punctatum*	OBL	N
	POLYGONACEAE	*Rumex salicifolius var. transitorius*	OBL	N
	SALICACEAE	*Salix lasiolepis*	FACW	N
	TYPHACEAE	*Typha latifolia*	OBL	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 81

SCVWD Wetland Assessment Checklist

Facility Name: Berryessa Creek
Location: from Montague Expwy d/s to 2nd railroad bridge

Survey Start Date: 10/3/00
Survey End Date: 10/3/00

Survey Chronology: Post-Project Survey- 2nd Year
Site Type: RS, Adjacent Reference Site
Tidal or Nontidal: NonTidal
If nontidal, is water in channel?: Yes

Investigator: Janell Hillman
Station # Start: 14300
Station # End: 16500

Map or Photo Used: not applicable
Acreage Estimates Made From: Field Measure
Photo Documentation: Digital
Photo Code: 12J

Notes: Water is present in channel at outfall structure and first RR bridge; water channel is dry u/s of bridge to Montague Expwy.

Dominance (>50% Relative Cover): NonTidal: other native

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	76-100%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

This reach of Berryessa Creek contained a section of dry, gravelly channel between Montague Expwy and the outfall structure, and a section of creek which was vegetated with wetland and had flowing water (from the outfall structure d/s). The wetland was dominated by Paspalum distichum (>50% relative cover), with Rorippa nasturtium-aquaticum present in the channel in patches and Echinochloa crus-galli fringing the wetland at the edge of banks (each with 20-50% relative cover). Total cover was thick, with the wetland existing mostly toe-to-toe in the channel. There were occasional open pockets of water. Native species relative cover was at the lower end of the 76-100% category.

One difference noted since last year's survey is that the section from Montague to the first RR bridge is completely dry this year, with not even a wetland fringe present at the edges of the channel. Only one small patch of wetland exists near the Montague bridge. Therefore, even if the channel d/s looks more vegetated than last year, the absence of wetland u/s could result in less overall wetland for the site in 2000.

Estimated Wetland Amount: 12038 sq. ft. (0.28 ac)

Code: 89

SCVWD Wetlands Plant List

Facility Name: Berryessa Creek
Location: from Montague Expwy d/s to 2nd railroad bridge
Survey Start Date: 10/3/00
Investigator: Janell Hillman

Survey Chronology: Post-Project Survey- 2nd Year
Site Type: RS, Adjacent Reference Site

Relative Cover	Family	Species	Wetland Indicator Status	Origin [1]
>50%	POACEAE	*Paspalum distichum*	OBL	N
=20-50%	BRASSICACEAE	*Rorippa nasturtium-aquaticum*	OBL	N
	POACEAE	*Echinochloa crus-galli*	FACW	E
<20%	ASTERACEAE	*Conyza canadensis*	FAC	N
	ASTERACEAE	*Picris echioides*	FAC	E
	ASTERACEAE	*Gnaphalium luteo-album*	FACW-	E
	ASTERACEAE	*Lactuca serriola*	FAC	E
	ASTERACEAE	*Xanthium strumarium*	FAC+	E
	CHENOPODIACEAE	*Atriplex triangularis*	FACW	N
	CYPERACEAE	*Cyperus eragrostis*	FACW	N
	EQUISETACEAE	*Equisetum arvense*	FAC	N
	MALVACEAE	*Malva sp.*	NOL	E
	ONAGRACEAE	*Epilobium ciliatum ssp. cilatum*	FACW	N
	ONAGRACEAE	*Ludwigia peploides ssp. peploides*	OBL	N
	POACEAE	*Cynodon dactylon*	FAC	E
	POACEAE	*Leptochloa fascicularis*	OBL	N
	POACEAE	*Polypogon monspeliensis*	FACW+	E
	POACEAE	*Lolium multiflorum*	NOL	E
	POACEAE	*Agrostis viridis*	OBL	E
	POLYGONACEAE	*Rumex crispus*	FACW-	E
	POLYGONACEAE	*Polygonum persicaria*	FACW	E
	SALICACEAE	*Populus fremontii*	FACW	N
	SALICACEAE	*Salix laevigata*	NOL	N
	SALICACEAE	*Salix sp.*	NOL	N
	TYPHACEAE	*Typha angustifolia*	OBL	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

SCVWD Wetland Assessment Checklist

Facility Name: San Tomas Aquino Creek
Location: from Great America Pkwy to u/s of Hetchy Hetchy pipes

Survey Start Date: 8/22/00
Survey End Date: 9/1/00

Survey Chronology: Post-Project Survey- 2nd Year
Site Type: RS, Adjacent Reference Site
Tidal or Nontidal: Tidal
If nontidal, is water in channel?:

Investigator: Janell Hillman
Station # Start: 5200
Station # End: 10500

Map or Photo Used: not applicable
Acreage Estimates Made From: Aerial Photo and Field Measure
Photo Documentation: Digital
Photo Code: 6J

Vegetation Type: Type 1 of 4

Dominance (>50% Relative Cover): Tidal: California bulrush

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	51-75%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

This vegetation type occurred in the channel on low island-like benches. It was dominated by Scirpus californicus (>50% relative cover), with Polygonum spp. and Ludwigia peploides common as a fringe in-between the stands of bulrush. Total cover was high (76-100%), and native species relative cover was in the 51-75% category.

These in-stream islands were present during last year's surveys (1999); however, the vegetation was not substantially established enough to form a distinct community.

Estimated Wetland Amount: 0.39 ac

Code: 65

SCVWD Wetlands Plant List

Facility Name: San Tomas Aquino Creek
Location: from Great America Pkwy to u/s of Hetchy Hetchy pipes
Survey Start Date: 8/22/00
Investigator: Janell Hillman

Survey Chronology: Post-Project Survey- 2nd Year
Site Type: RS, Adjacent Reference Site
Vegetation Type: Type 1 of 4

Relative Cover	Family	Species	Wetland Indicator Status	Origin [1]
>50%	CYPERACEAE	*Scirpus californicus*	OBL	N
<20%	APIACEAE	*Foeniculum vulgare*	FACU	E
	ASTERACEAE	*Xanthium strumarium*	FAC+	E
	BRASSICACEAE	*Rorippa nasturtium-aquaticum*	OBL	N
	CHENOPODIACEAE	*Chenopodium ambrosioides*	FAC	E
	CYPERACEAE	*Cyperus eragrostis*	FACW	N
	FABACEAE	*Melilotus alba*	FACU+	E
	ONAGRACEAE	*Ludwigia peploides ssp. peploides*	OBL	N
	POLYGONACEAE	*Rumex crispus*	FACW-	E
	POLYGONACEAE	*Polygonum lapathifolium*	OBL	N
	POLYGONACEAE	*Polygonum persicaria*	FACW	E
	POLYGONACEAE	*Polygonum punctatum*	OBL	N
	URTICACEAE	*Urtica dioica ssp. holosericea*	FACW	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 65

SCVWD Wetland Assessment Checklist

Facility Name: San Tomas Aquino Creek
Location: from Great America Pkwy to u/s of Hetchy Hetchy pipes

Survey Start Date: 8/22/00
Survey End Date: 9/1/00

Survey Chronology: Post-Project Survey- 2nd Year
Site Type: RS, Adjacent Reference Site
Tidal or Nontidal: Tidal
If nontidal, is water in channel?:

Investigator: Janell Hillman
Station # Start: 5200
Station # End: 10500

Map or Photo Used: not applicable
Acreage Estimates Made From: Aerial Photo and Field Measure
Photo Documentation: Digital
Photo Code: 6J

Vegetation Type: Type 2 of 4

Dominance (>50% Relative Cover): Tidal: other native

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	51-75%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

This vegetation type was prevalent on banks at the edges of and above the channel. It was also found on low bars which were common in the stream bed upstream of the Great America Amusement Park. Some of the wetland along the banks formed only a thin fringe due to the steep nature of the topography, which in some areas precludes the establishment of wetland vegetation altogether.

Vegetation Type 2 was dominated by Polygonum spp. (>50% relative cover); especially Polygonum punctatum and P. persicaria. However, it was a mixed vegetation community and contained many other species as well, such as Cyperus eragrostis, Euthamia occidentalis and Echinochloa crus-galli (found slightly higher up on the banks). Total cover was thick (76-100% category) and native species relative cover was between 51-75%.

Estimated Wetland Amount: 1.56 ac

Code: 65

SCVWD Wetlands Plant List

Facility Name:	San Tomas Aquino Creek	**Survey Start Date:**	8/22/00
Location:	from Great America Pkwy to u/s of Hetchy Hetchy pipes	**Investigator:**	Janell Hillman

Survey Chronology: Post-Project Survey- 2nd Year
Site Type: RS, Adjacent Reference Site
Vegetation Type: Type 2 of 4

Relative Cover	Family	Species	Wetland Indicator Status	Origin [1]
=20-50%	POLYGONACEAE	*Polygonum persicaria*	FACW	E
	POLYGONACEAE	*Polygonum punctatum*	OBL	N
<20%	ASTERACEAE	*Euthamia occidentalis*	OBL	N
	ASTERACEAE	*Xanthium strumarium*	FAC+	E
	BRASSICACEAE	*Lepidium latifolium*	FACW	I
	CYPERACEAE	*Cyperus eragrostis*	FACW	N
	LYTHRACEAE	*Lythrum californicum*	OBL	N
	ONAGRACEAE	*Epilobium ciliatum ssp. cilatum*	FACW	N
	POACEAE	*Echinochloa crus-galli*	FACW	E
	POACEAE	*Piptatherum miliaceum*	NOL	E
	POACEAE	*Polypogon monspeliensis*	FACW+	E
	POACEAE	*Agrostis viridis*	OBL	E
	POLYGONACEAE	*Rumex crispus*	FACW-	E
	TYPHACEAE	*Typha sp.*	OBL	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 65

SCVWD Wetland Assessment Checklist

Facility Name: San Tomas Aquino Creek
Location: from Great America Pkwy to u/s of Hetchy Hetchy pipes

Survey Start Date: 8/22/00
Survey End Date: 9/1/00

Survey Chronology: Post-Project Survey- 2nd Year
Site Type: RS, Adjacent Reference Site
Tidal or Nontidal: Tidal
If nontidal, is water in channel?:

Investigator: Janell Hillman
Station # Start: 5200
Station # End: 10500

Map or Photo Used: not applicable
Acreage Estimates Made From: Aerial Photo and Field Measure
Photo Documentation: Digital
Photo Code: 6J

Vegetation Type: Type 3 of 4

Dominance (>50% Relative Cover): Tidal: non-native

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	26-50%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

Vegetation Type 3 was found in only one area on this section of San Tomas Aquino Creek: on a low, wide bar upstream of Great America Parkway. It was dominated by Echinochloa crus-galli (>50% relative cover), with Polygonum spp. (P. punctatum and P. persicaria) occurring as a subdominant category (20-50% relative cover combined). Total cover was quite thick (100%), while native species relative cover was low (26-50%). Soil was saturated and gritty-textured, with some clay.

From afar this bench looked like a sea of thick, green grass due to the height and thickness of the Echinochloa. In previous years, this low bar was dominated by low-stature herbaceous wetland species such as Polygonum, Chenopodium, and Ludwigia, which occurred rather sparsely on the site amidst areas of unvegetated mud flat.

Estimated Wetland Amount: 0.02 ac

Code: 65

SCVWD Wetlands Plant List

Facility Name: San Tomas Aquino Creek
Location: from Great America Pkwy to u/s of Hetchy Hetchy pipes
Survey Start Date: 8/22/00
Investigator: Janell Hillman

Survey Chronology: Post-Project Survey- 2nd Year
Site Type: RS, Adjacent Reference Site
Vegetation Type: Type 3 of 4

Relative Cover	Family	Species	Wetland Indicator Status	Origin [1]
>50%	POACEAE	*Echinochloa crus-galli*	FACW	E
=20-50%	POLYGONACEAE	*Polygonum spp.*	NOL	N
<20%	ASTERACEAE	*Bidens frondosa*	FACW	N
	ASTERACEAE	*Euthamia occidentalis*	OBL	N
	CYPERACEAE	*Scirpus californicus*	OBL	N
	CYPERACEAE	*Scirpus robustus*	OBL	N
	ONAGRACEAE	*Epilobium ciliatum ssp. cilatum*	FACW	N
	ONAGRACEAE	*Ludwigia peploides ssp. peploides*	OBL	N
	POLYGONACEAE	*Polygonum lapathifolium*	OBL	N
	POLYGONACEAE	*Polygonum persicaria*	FACW	E
	POLYGONACEAE	*Polygonum punctatum*	OBL	N
	TYPHACEAE	*Typha sp.*	OBL	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 65

SCVWD Wetland Assessment Checklist

Facility Name: San Tomas Aquino Creek
Location: from Great America Pkwy to u/s of Hetchy Hetchy pipes

Survey Start Date: 8/22/00
Survey End Date: 9/1/00

Survey Chronology: Post-Project Survey- 2nd Year
Site Type: RS, Adjacent Reference Site
Tidal or Nontidal: Tidal
If nontidal, is water in channel?:

Investigator: Janell Hillman
Station # Start: 5200
Station # End: 10500

Map or Photo Used: not applicable
Acreage Estimates Made From: Aerial Photo and Field Measure
Photo Documentation: Digital
Photo Code: 6J

Vegetation Type: Type 4 of 4

Dominance (>50% Relative Cover): Tidal: non-native

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	26-50%
Invasive Species Relative % Cover:	6-25%

Vegetation Description:

Vegetation Type 4 was a weedy fringe of mixed wetland species occurring above the low wetland and on the channel bank. It was co-dominated by Euthamia occidentalis (20-50% relative cover) and a mixture of exotic grasses (20-50% relative cover combined), such as Piptatherum miliaceum, Agrostis viridis, Cynodon dactylon, and Paspalum distichum (a native). In general, cover was extremely thick and matted. Native species of relative cover was low (26-50%). The invasive Lepidium latifolium was fairly common (6-25% relative cover).

The bench topography was quite varied; with the higher areas containing mostly drier soil and vegetated with Euthamia, while the lower areas were very moist and contained more of the mixed grass species. The bench narrowed and the soil became more sandy at the upstream end of the site.

Vegetation Type 4 was somewhat similar geographically to the higher-elevation areas of Habitat Type 2. Type 4 was dissimilar in that it had an almost complete absence of Epilobium ciliatum ssp. ciliatum and much more Lepidium latifolium. In general, it was much weedier.

Estimated Wetland Amount: 0.18 ac

Code: 65

SCVWD Wetlands Plant List

Facility Name: San Tomas Aquino Creek
Location: from Great America Pkwy to u/s of Hetchy Hetchy pipes
Survey Start Date: 8/22/00
Investigator: Janell Hillman

Survey Chronology: Post-Project Survey- 2nd Year
Site Type: RS, Adjacent Reference Site
Vegetation Type: Type 4 of 4

Relative Cover	Family	Species	Wetland Indicator Status	Origin[1]
=20-50%	ASTERACEAE	*Euthamia occidentalis*	OBL	N
<20%	APIACEAE	*Foeniculum vulgare*	FACU	E
	ASTERACEAE	*Bidens frondosa*	FACW	N
	BRASSICACEAE	*Lepidium latifolium*	FACW	I
	BRASSICACEAE	*Brassica nigra*	UPL	E
	BRASSICACEAE	*Raphanus sativus*	UPL	E
	CHENOPODIACEAE	*Chenopodium ambrosioides*	FAC	E
	CYPERACEAE	*Scirpus californicus*	OBL	N
	CYPERACEAE	*Cyperus eragrostis*	FACW	N
	CYPERACEAE	*Scirpus robustus*	OBL	N
	EQUISETACEAE	*Equisetum arvense*	FAC	N
	LAMIACEAE	*Mentha sp.*	NOL	UNK
	LAMIACEAE	*Mentha x piperita*	OBL	E
	MYRTACEAE	*Eucalyptus sp.*	NOL	E
	ONAGRACEAE	*Epilobium ciliatum ssp. cilatum*	FACW	N
	POACEAE	*Phalaris aquatica*	FAC+	E
	POACEAE	*Cynodon dactylon*	FAC	E
	POACEAE	*Paspalum dilatatum*	FAC	E
	POACEAE	*Paspalum distichum*	OBL	N
	POACEAE	*Piptatherum miliaceum*	NOL	E
	POACEAE	*Agrostis viridis*	OBL	E
	POLYGONACEAE	*Polygonum lapathifolium*	OBL	N
	POLYGONACEAE	*Polygonum persicaria*	FACW	E
	URTICACEAE	*Urtica dioica ssp. holosericea*	FACW	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 65

SCVWD Wetland Assessment Checklist

Facility Name: Sunnyvale East Channel
Location: from Hwy 237 to Caribbean Dr

Survey Start Date: 9/11/00
Survey End Date: 9/11/00

Survey Chronology: Post-Project Survey- 2nd Year
Site Type: RS, Adjacent Reference Site
Tidal or Nontidal: Tidal
If nontidal, is water in channel?:

Investigator: Janell Hillman
Station # Start: 2300
Station # End: 6000

Map or Photo Used: not applicable
Acreage Estimates Made From: Aerial Photo
Photo Documentation: Digital
Photo Code: 7J

Dominance (>50% Relative Cover): Tidal: other native

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	76-100%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

The west bank of this reach of Sunnyvale East comrpises the reference study site. A bench, wide in places (10+ feet) along the bank supports wetland which is dominated by Polygonum punctatum (>50% relative cover), with Ludwigia peploides the next most abundant species (20-50% relative cover). Total cover was thick (76-100%) and native species relative cover was high. In some places Ludwigia was growing thickly into the center of the channel almost to the opposite bank.

Although the non-native grasses seen on the site last year were present during this survey, they did not form discrete patches. An exception to this observation was a thick patch of Leersia oryzoides, a native.

Estimated Wetland Amount: 0.63 ac

Code: 69

SCVWD Wetlands Plant List

Facility Name: Sunnyvale East Channel
Location: from Hwy 237 to Caribbean Dr

Survey Start Date: 9/11/00
Investigator: Janell Hillman

Survey Chronology: Post-Project Survey- 2nd Year
Site Type: RS, Adjacent Reference Site

Relative Cover	Family	Species	Wetland Indicator Status	Origin[1]
>50%	POLYGONACEAE	*Polygonum punctatum*	OBL	N
=20-50%	ONAGRACEAE	*Ludwigia peploides ssp. peploides*	OBL	N
<20%	APIACEAE	*Foeniculum vulgare*	FACU	E
	ASTERACEAE	*Picris echioides*	FAC	E
	BRASSICACEAE	*Lepidium latifolium*	FACW	I
	CYPERACEAE	*Scirpus californicus*	OBL	N
	CYPERACEAE	*Cyperus eragrostis*	FACW	N
	CYPERACEAE	*Scirpus pungens*	OBL	N
	CYPERACEAE	*Scirpus robustus*	OBL	N
	POACEAE	*Paspalum distichum*	OBL	N
	POACEAE	*Sorghum halepense*	FACU	E
	POACEAE	*Leersia oryzoides*	OBL	N
	POACEAE	*Agrostis viridis*	OBL	E
	POLYGONACEAE	*Rumex crispus*	FACW-	E

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 69

APPENDIX D
General Reference Site Checklists

SCVWD Wetland Assessment Checklist

Facility Name: Berryessa Creek
Location: 1500 ft u/s Los Coches Ave; length 215 ft

Survey Start Date: 10/3/00
Survey End Date: 10/3/00

Survey Chronology:
Site Type: RS, General Reference Site
Tidal or Nontidal: NonTidal
If nontidal, is water in channel?: Yes

Investigator: Janell Hillman
Station # Start: 10985
Station # End: 11200

Map or Photo Used: not applicable
Acreage Estimates Made From: Field Measure
Photo Documentation: Digital
Photo Code: 12J

Dominance (>50% Relative Cover): NonTidal: other native

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	51-75%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

This section of Berryessa Creek contained a mix of species including Agrostis viridis, Rorippa nasturtium-aquaticum, Paspalum distichum, and Cynodon dactylon. There was not a clear dominant, although mixed herbaceous grasses seemed to be most prevalent, along with Rorippa. Total cover fell within the 76-100% category. Native species relative cover was between 51-75%.

Patchy wetland fringes the edges of the channel banks and is becoming fairly well developed. Vegetation looked lush and green, in contrast to last year's assessment. Total cover is higher as well. Roughly half of the width of the channel is wetland.

Estimated Wetland Amount: 1505 sq. ft. (0.03 ac)

Code: 88

SCVWD Wetlands Plant List

Facility Name: Berryessa Creek
Location: 1500 ft u/s Los Coches Ave; length 215 ft
Survey Start Date: 10/3/00
Investigator: Janell Hillman

Survey Chronology:
Site Type: RS, General Reference Site

Relative Cover	Family	Species	Wetland Indicator Status	Origin [1]
<20%	ASTERACEAE	*Picris echioides*	FAC	E
	ASTERACEAE	*Xanthium strumarium*	FAC+	E
	BRASSICACEAE	*Rorippa nasturtium-aquaticum*	OBL	N
	CHENOPODIACEAE	*Atriplex triangularis*	FACW	N
	CYPERACEAE	*Cyperus eragrostis*	FACW	N
	CYPERACEAE	*Scirpus robustus*	OBL	N
	LYTHRACEAE	*Lythrum californicum*	OBL	N
	POACEAE	*Echinochloa crus-galli*	FACW	E
	POACEAE	*Cynodon dactylon*	FAC	E
	POACEAE	*Paspalum distichum*	OBL	N
	POACEAE	*Leptochloa fascicularis*	OBL	N
	POACEAE	*Polypogon interruptus*	OBL	E
	POACEAE	*Polypogon monspeliensis*	FACW+	E
	POACEAE	*Lolium multiflorum*	NOL	E
	POACEAE	*Agrostis viridis*	OBL	E
	POLYGONACEAE	*Polygonum lapathifolium*	OBL	N
	POLYGONACEAE	*Polygonum punctatum*	OBL	N
	TYPHACEAE	*Typha latifolia*	OBL	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 88

SCVWD Wetland Assessment Checklist

Facility Name: East Little Llagas Creek
Location: from 300 ft d/s San Martin Crk to 220 ft d/s

Survey Start Date: 9/21/00
Survey End Date: 9/21/00

Survey Chronology:
Site Type: RS, General Reference Site
Tidal or Nontidal: NonTidal
If nontidal, is water in channel?: No

Investigator:
Station # Start: 4500
Station # End: 4720

Map or Photo Used: not applicable
Acreage Estimates Made From: Field Measure
Photo Documentation: Digital
Photo Code:

Dominance (>50% Relative Cover):

Vegetation Quality Indicators:

Total % Cover:

Native Species Relative % Cover:

Invasive Species Relative % Cover:

Vegetation Description:

The site conditions were comparable to those in prior years. The site was dry, and the downcut channel appeared to be more deeply incised than before. The incision is very narrow. There were occiasional indidual and small patches of Xanthium strumarium, Cynodon dactylon, Picris echioides and Polypogon monspliensis.

Estimated Wetland Amount: 0

Code: 78

SCVWD Wetland Assessment Checklist

Facility Name: Fisher Creek
Location: 500 ft d/s Laguna Rd; length 100 ft

Survey Start Date: 9/21/00
Survey End Date: 9/21/00

Survey Chronology:
Site Type: RS, General Reference Site
Tidal or Nontidal: NonTidal
If nontidal, is water in channel?: Yes

Investigator: Gale Rankin
Station # Start: 14900
Station # End: 15000

Map or Photo Used: not applicable
Acreage Estimates Made From: Field Measure
Photo Documentation: Digital
Photo Code:

Dominance (>50% Relative Cover): NonTidal: other native

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	76-100%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

Dense wetland vegetation occupies the entire channel from bank to bank as in prior years. Polygonum punctatum is now the dominant species of the site with over 75% relative cover. In prior years, cattails accounted for nearly 100% relative cover. This year cattails were few, and were located mostly at the very upstream end. The Polygonum extended further up onto the banks than in prior years. The bank soils beneath the Polygonum were extremely moist (saturated). The farmer on-site said that ground water in the fields is currently just 33' below the surface.

Estimated Wetland Amount: 2140 sq. ft. (0.05 ac)

Code: 74

SCVWD Wetlands Plant List

Facility Name: Fisher Creek
Location: 500 ft d/s Laguna Rd; length 100 ft
Survey Start Date: 9/21/00
Investigator: Gale Rankin

Survey Chronology:
Site Type: RS, General Reference Site

Relative Cover	Family	Species	Wetland Indicator Status	Origin[1]
>50%	POLYGONACEAE	*Polygonum punctatum*	OBL	N
<20%	APIACEAE	*Conium maculatum*	FACW	E
	BRASSICACEAE	*Rorippa nasturtium-aquaticum*	OBL	N
	CYPERACEAE	*Cyperus eragrostis*	FACW	N
	ONAGRACEAE	*Epilobium ciliatum ssp. cilatum*	FACW	N
	ONAGRACEAE	*Ludwigia peploides ssp. peploides*	OBL	N
	POLYGONACEAE	*Polygonum lapathifolium*	OBL	N
	POLYGONACEAE	*Polygonum persicaria*	FACW	E
	TYPHACEAE	*Typha latifolia*	OBL	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 74

SCVWD Wetland Assessment Checklist

Facility Name: Greystone Creek
Location: 500 ft u/s Camden Ave; length 210 ft

Survey Start Date: 10/11/00
Survey End Date: 10/11/00

Survey Chronology:
Site Type: RS, General Reference Site
Tidal or Nontidal: NonTidal
If nontidal, is water in channel?: Yes

Investigator: Janell Hillman
Station # Start: 1100
Station # End: 1310

Map or Photo Used: not applicable
Acreage Estimates Made From: Field Measure
Photo Documentation: Digital
Photo Code: 14 J

Dominance (>50% Relative Cover): NonTidal: other native

Vegetation Quality Indicators:

Total % Cover:	51-75%
Native Species Relative % Cover:	51-75%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

This section of Greystone Creek contained only sparse, isolated patches of wetland along the banks and occasionally in the center channel, which was mostly unvegetated. Rorippa nasturtium-aquaticum was common (20-50% relative cover). Total vegetative cover was between 51-75%; mainly due to the patches of Rorippa that were sparse, young growth. Native species relative cover was between 51-75%, with Rorippa predominating.

On the day before this site was surveyed, it rained and Greystone Creek received some moderate flows, as indicated by scour marks and deposition of plant material and sediment. Therefore, it was somewhat difficult to obtain an accurate acreage and coverage of the wetland in the creek. Although total percent cover was higher in 2000 due to the prevalence of contained and isolated patches of higher-cover wetland, it still looks as though there was less total wetland in the channel than in 1999.

Estimated Wetland Amount: 211 sq. ft

Code: 92

SCVWD Wetlands Plant List

Facility Name: Greystone Creek
Location: 500 ft u/s Camden Ave; length 210 ft
Survey Start Date: 10/11/00
Investigator: Janell Hillman

Survey Chronology:
Site Type: RS, General Reference Site

Relative Cover	Family	Species	Wetland Indicator Status	Origin[1]
=20-50%	BRASSICACEAE	*Rorippa nasturtium-aquaticum*	OBL	N
<20%	ASTERACEAE	*Picris echioides*	FAC	E
	CYPERACEAE	*Cyperus eragrostis*	FACW	N
	ONAGRACEAE	*Epilobium ciliatum ssp. cilatum*	FACW	N
	POACEAE	*Echinochloa crus-galli*	FACW	E
	POLYGONACEAE	*Polygonum persicaria*	FACW	E
	POLYGONACEAE	*Polygonum punctatum*	OBL	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 92

SCVWD Wetland Assessment Checklist

Facility Name: Lower Silver Creek
Location: 250 ft d/s Silver Creek Rd; length 105 ft

Survey Start Date: 10/12/00
Survey End Date: 10/12/00

Survey Chronology:
Site Type: RS, General Reference Site
Tidal or Nontidal: NonTidal
If nontidal, is water in channel?: Yes

Investigator: Janell Hillman
Station # Start: 37395
Station # End: 37500

Map or Photo Used: not applicable
Acreage Estimates Made From: Field Measure
Photo Documentation: Digital
Photo Code: 14 J

Dominance (>50% Relative Cover):

NonTidal: bulrush, cattail, burreed or mix

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	76-100%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

This section of Lower Silver Creek was dominated by Typha latifolia (about 80% relative cover), which occurred in the channel toe-to-toe in large, discontinuous patches. Total cover was thick; however, the Typha was yellowed and dying and looked like it had been sprayed. The occasional open pockets, or breaks in the Typha, were vegetated by Echinochloa crus-galli and a mix of other species with some bare water also visible. In general, wetland vegetation was not very diverse. Native species relative cover was within the 76-100% category.

Evidence of recent flows was visible from sediment deposition and bent vegetation.

Estimated Wetland Amount:

1401 sq. ft. (0.03 ac)

Code: 96

SCVWD Wetlands Plant List

Facility Name: Lower Silver Creek
Location: 250 ft d/s Silver Creek Rd; length 105 ft
Survey Start Date: 10/12/00
Investigator: Janell Hillman

Survey Chronology:
Site Type: RS, General Reference Site

Relative Cover	Family	Species	Wetland Indicator Status	Origin[1]
>50%	TYPHACEAE	*Typha latifolia*	OBL	N
<20%	CYPERACEAE	*Cyperus eragrostis*	FACW	N
	POACEAE	*Echinochloa crus-galli*	FACW	E
	POLYGONACEAE	*Polygonum punctatum*	OBL	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 96

SCVWD Wetland Assessment Checklist

Facility Name: Norwood Creek
Location: from 780 ft u/s Lower Silver Crk; length 320 ft

Survey Start Date: 10/12/00
Survey End Date: 10/12/00

Survey Chronology:
Site Type: RS, General Reference Site
Tidal or Nontidal: NonTidal
If nontidal, is water in channel?: Yes

Investigator: Janell Hillman
Station # Start: 780
Station # End: 1100

Map or Photo Used: not applicable
Acreage Estimates Made From: Field Measure
Photo Documentation: Digital
Photo Code: 14 J

Dominance (>50% Relative Cover): NonTidal: other native

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	51-75%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

This section of Norwood Creek contained a thin, developing fringe of wetland dominated by Cyperus eragrostis (>50% relative cover). This fringe occurred occasionally along the banks. It was more well-defined along the left bank. Picris echioides was also common in places. Due to water depth no wetland occurred in the channel beyond the bank. Total cover was within the 76-100% category. Native species relative cover was between 51-75%.

Water appeared fairly stagnant, especially at the downstream end near the confluence with Lower Silver Creek. Quite a bit of debris was in the creek due to the recent storm and lack of adequate drainage through the culvert to Lower Silver.

Estimated Wetland Amount: 930 sq. ft. (0.02 ac)

Code: 97

SCVWD Wetlands Plant List

Facility Name: Norwood Creek
Location: from 780 ft u/s Lower Silver Crk; length 320 ft
Survey Start Date: 10/12/00
Investigator: Janell Hillman

Survey Chronology:
Site Type: RS, General Reference Site

Relative Cover	Family	Species	Wetland Indicator Status	Origin [1]
>50%	CYPERACEAE	*Cyperus eragrostis*	FACW	N
<20%	ASTERACEAE	*Picris echioides*	FAC	E
	CHENOPODIACEAE	*Atriplex triangularis*	FACW	N
	ONAGRACEAE	*Epilobium ciliatum ssp. cilatum*	FACW	N
	POACEAE	*Echinochloa crus-galli*	FACW	E
	POACEAE	*Polypogon monspeliensis*	FACW+	E
	POLYGONACEAE	*Polygonum punctatum*	OBL	N
	TYPHACEAE	*Typha latifolia*	OBL	N
	TYPHACEAE	*Typha sp.*	OBL	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 97

SCVWD Wetland Assessment Checklist

Facility Name: Smith Creek
Location: 200 ft d/s Elam Ave; length 120 ft

Survey Start Date: 10/11/00
Survey End Date: 10/11/00

Survey Chronology:
Site Type: RS, General Reference Site
Tidal or Nontidal: NonTidal
If nontidal, is water in channel?: Yes

Investigator: Janell Hillman
Station # Start: 880
Station # End: 1000

Map or Photo Used: not applicable
Acreage Estimates Made From: Field Measure
Photo Documentation: Digital
Photo Code: 14 J

Dominance (>50% Relative Cover): NonTidal: non-native

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	26-50%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

This section of Smith Creek contained a thin fringe of wetland along the bank margins about 2ft above the channel bed. The section between the wetland on the fairly steep banks and the channel bed was unvegetated. It appeared as though the water level had changed, resulting in this "perched" wetland fringe. The wetland was dominated by Paspalum dilatatum (>50% relative cover). Also common were Polygonum punctatum and Cyperus eragrostis (each with 20-50% relative cover). The Polygonum grew in occasional patches mixed in with Paspalum and Cyperus as well as alone at the toe of the slope near the water's edge. Total cover was between 76-100%. Native species relative cover was very low (26-50%) due to the abundance of Paspalum dilatatum. Although Paspalum is a FAC species, the scattered mix of other wetland species was enough to determine the area wetland. Evidence of hydrology was somewhat uncertain due to recent rains.

Estimated Wetland Amount: 442 sq. ft.; 0.01 ac

Code: 93

SCVWD Wetlands Plant List

Facility Name: Smith Creek
Location: 200 ft d/s Elam Ave; length 120 ft
Survey Start Date: 10/11/00
Investigator: Janell Hillman

Survey Chronology:
Site Type: RS, General Reference Site

Relative Cover	Family	Species	Wetland Indicator Status	Origin[1]
>50%	POACEAE	*Paspalum dilatatum*	FAC	E
=20-50%	CYPERACEAE	*Cyperus eragrostis*	FACW	N
	POLYGONACEAE	*Polygonum punctatum*	OBL	N
<20%	ASTERACEAE	*Bidens frondosa*	FACW	N
	BRASSICACEAE	*Rorippa nasturtium-aquaticum*	OBL	N
	ONAGRACEAE	*Epilobium ciliatum ssp. cilatum*	FACW	N
	POACEAE	*Cynodon dactylon*	FAC	E
	POLYGONACEAE	*Rumex salicifolius var. transitorius*	OBL	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 93

SCVWD Wetland Assessment Checklist

Facility Name: Tularcitos Creek
Location: from Shetland Ct d/s 380 ft

Survey Start Date: 10/5/00
Survey End Date: 10/5/00

Survey Chronology:
Site Type: RS, General Reference Site
Tidal or Nontidal: NonTidal
If nontidal, is water in channel?: Yes

Investigator: Janell Hillman
Station # Start: 900
Station # End: 1280

Map or Photo Used: not applicable
Acreage Estimates Made From: Field Measure
Photo Documentation: Digital
Photo Code: 13 J

Vegetation Type: Type 1 of 2: Ludwigia dominated

Dominance (>50% Relative Cover): NonTidal: other native

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	76-100%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

This section of Tularcitos creek was dominated by two habitat types: a low-growing herbaceous type and a higher-stature, emergent type. These types alternately completely dominated the channel. Wetland existed toe-to-toe and cover was extremely thick in both types. No open water was visible in the channel.

Vegetation Type 1 of 2 was dominated by Ludwigia peploides (>50% relative cover). Ludwigia existed toe-to-toe in the channel and this type was fairly monospecific. The few other species present included one clumped patch of Scirpus maritimus and Cyperus eragrostis. Total cover was thick and native (76% category for each).

In great contrast to last year, thick stands of Typha are present as a second habitat type in the channel. In 1999, the channel was solely dominated by Ludwigia with only occasional small patches of cattails present.

Estimated Wetland Amount: 2052 sq. ft. (0.05 ac)

Code: 91

SCVWD Wetlands Plant List

Facility Name: Tularcitos Creek
Location: from Shetland Ct d/s 380 ft
Survey Start Date: 10/5/00
Investigator: Janell Hillman

Survey Chronology:
Site Type: RS, General Reference Site
Vegetation Type: Type 1 of 2: Ludwigia dominated

Relative Cover	Family	Species	Wetland Indicator Status	Origin [1]
>50%	ONAGRACEAE	*Ludwigia peploides ssp. peploides*	OBL	N
<20%	CYPERACEAE	*Cyperus eragrostis*	FACW	N
	CYPERACEAE	*Scirpus maritimus*	OBL	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 91

SCVWD Wetland Assessment Checklist

Facility Name: Tularcitos Creek
Location: from Shetland Ct d/s 380 ft

Survey Start Date: 10/5/00
Survey End Date: 10/5/00

Survey Chronology:
Site Type: RS, General Reference Site
Tidal or Nontidal: NonTidal
If nontidal, is water in channel?: Yes

Investigator: Janell Hillman
Station # Start: 900
Station # End: 1280

Map or Photo Used: not applicable
Acreage Estimates Made From: Field Measure
Photo Documentation: Digital
Photo Code: 13 J

Vegetation Type: Type 2 of 2: Typha latifolia dominated

Dominance (>50% Relative Cover): NonTidal: bulrush, cattail, burreed or mix

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	76-100%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

Vegetation Type 2 of 2 was dominated by Typha latifolia (>50% relative cover). Typha grew thickly toe-to-toe in the channel, separated by monospecific patches of Ludwigia peploides (Veg Type 1 of 2- see previous assessment). However, in this Veg Type 2 Ludwigia was also very common, accounting for all of the understory cover beneath the Typha. Due to the stratified layering of vegetation, total cover was extremely thick. Both Typha and Ludwigia had relative cover values of >50%. The few other species present in limited abundance included Epilobium ciliatum, Sonchus asper, Lythrum californicum, and Cyperus eragrostis. Native species relative cover was also high (76-100% category).

Estimated Wetland Amount: 5168 sq. ft. (0.12 ac)

Code: 91

SCVWD Wetlands Plant List

Facility Name: Tularcitos Creek
Location: from Shetland Ct d/s 380 ft

Survey Start Date: 10/5/00
Investigator: Janell Hillman

Survey Chronology:
Site Type: RS, General Reference Site
Vegetation Type: Type 2 of 2: Typha latifolia dominated

Relative Cover	Family	Species	Wetland Indicator Status	Origin[1]
>50%	ONAGRACEAE	*Ludwigia peploides ssp. peploides*	OBL	N
	TYPHACEAE	*Typha latifolia*	OBL	N
<20%	ASTERACEAE	*Sonchus asper*	FAC	E
	CYPERACEAE	*Cyperus eragrostis*	FACW	N
	CYPERACEAE	*Scirpus maritimus*	OBL	N
	LYTHRACEAE	*Lythrum californicum*	OBL	N
	ONAGRACEAE	*Epilobium ciliatum ssp. cilatum*	FACW	N
	POLYGONACEAE	*Polygonum punctatum*	OBL	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 91

SCVWD Wetland Assessment Checklist

Facility Name: West Little Llagas Creek
Location: from Cosmo Ave u/s 100 ft

Survey Start Date: 9/21/00
Survey End Date: 9/21/00

Survey Chronology:
Site Type: RS, General Reference Site
Tidal or Nontidal: NonTidal
If nontidal, is water in channel?: No

Investigator:
Station # Start: 10000
Station # End: 10100

Map or Photo Used: not applicable
Acreage Estimates Made From: Field Measure
Photo Documentation: Digital
Photo Code:

Dominance (>50% Relative Cover):

Vegetation Quality Indicators:

Total % Cover:

Native Species Relative % Cover:

Invasive Species Relative % Cover:

Vegetation Description:

Site conditions were similar to last year's. The channel bed was dry and no wetland was present. Xanthium was again the most prevalent species of the sparsely vegetated channel bed. Scattered individuals of hydrophytic species along the edge of the low -flow channel intermixed with upland grasses (Avena sp.). These included Cyperus eragrostis, Rumex crispus and Paspalum diliatatum.

Estimated Wetland Amount: 0

Code: 77

SCVWD Wetland Assessment Checklist

Facility Name: West Little Llagas Creek
Location: d/s Main St; length 80 ft

Survey Start Date: 9/21/00
Survey End Date: 9/21/00

Survey Chronology:
Site Type: RS, General Reference Site
Tidal or Nontidal: NonTidal
If nontidal, is water in channel?: Yes

Investigator: Gale Rankin
Station # Start: 15200
Station # End: 15280

Map or Photo Used: not applicable
Acreage Estimates Made From: Field Measure
Photo Documentation: Digital
Photo Code:

Dominance (>50% Relative Cover):

NonTidal: bulrush, cattail, burreed or mix

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	76-100%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

Wetland vegetation occupied the entire channel bed from bank to bank. Typha comprised nearly 100% relative cover. The other species present were lower stature herbs, such as Cynodon dactylon, Polygonum punctatum and Epilobium ciliatum. These were located on the outside edge of the dense cattail stand.

Estimated Wetland Amount:

960 sq. ft (0.22 ac)

Code: 76

SCVWD Wetlands Plant List

Facility Name: West Little Llagas Creek
Location: d/s Main St; length 80 ft
Survey Start Date: 9/21/00
Investigator: Gale Rankin

Survey Chronology:
Site Type: RS, General Reference Site

Relative Cover	Family	Species	Wetland Indicator Status	Origin[1]
>50%	TYPHACEAE	*Typha latifolia*	OBL	N
<20%	ASTERACEAE	*Picris echioides*	FAC	E
	ONAGRACEAE	*Epilobium ciliatum ssp. cilatum*	FACW	N
	POACEAE	*Cynodon dactylon*	FAC	E
	POACEAE	*Paspalum dilatatum*	FAC	E
	POLYGONACEAE	*Rumex crispus*	FACW-	E

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 76

SCVWD Wetland Assessment Checklist

Facility Name: Guadalupe River
Location: 1400 ft to 750 ft u/s Tasman Dr

Survey Start Date: 10/16/00
Survey End Date: 10/16/00

Survey Chronology:
Site Type: RS, General Reference Site
Tidal or Nontidal: Tidal
If nontidal, is water in channel?:

Investigator: Janell Hillman
Station # Start: 31800
Station # End: 32550

Map or Photo Used: not applicable
Acreage Estimates Made From: Aerial Photo
Photo Documentation: Digital
Photo Code: Gale's digital camera

Vegetation Type: Vegetation Type 1 of 2

Dominance (>50% Relative Cover): Tidal: other native

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	51-75%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

This section of Guadalupe River was vegetated by two wetland types: a low-growing herbaceous type dominated by annuals which occurred on wide, low benches above the channel; and a tall perennial emergent type located along the bank edges of the open, unvegetated low flow channel. The two types were easily distinguishable on the aerial photo and in the field.

Vegetation Type 1 of 2 was dominated by Atriplex triangularis (>50% relative cover). Picris echioides was common, approaching 20% cover in some places. In general, this vegetation type occurred on the low, wide benches above the center channel and its bank margins. It formed a mixed and patchy community, with Polygonum spp. also common, especially in one patch on the left bank (mostly P. punctatum). Total cover was very thick; in some places the matted, decaying biomass of Typha which dominated this area in past years was evident as a springy, crinkly feel underneath the Atriplex and other vegetation which formed an almost impenetrable layer this year. In other places the Typha had completely decayed and moist soil was noticable underneath the thick vegetative cover. Some small stands of living Typha were present, but there was none of the dead standing biomass seen last year.

Topography was varied, with several depresssions evident underfoot. No open ground was visible. Native species relative cover fell within the 51-75% category. Invasive species relative cover was less than 5%; the invasive Lepidium latifolium was found only sporadically along the wetland/upland bounday and at lower abundance this year, in great contrast to last year.

Estimated Wetland Amount: 2.56 ac

Code: 99

SCVWD Wetlands Plant List

Facility Name: Guadalupe River
Location: 1400 ft to 750 ft u/s Tasman Dr
Survey Start Date: 10/16/00
Investigator: Janell Hillman

Survey Chronology:
Site Type: RS, General Reference Site
Vegetation Type: Vegetation Type 1 of 2

Relative Cover	Family	Species	Wetland Indicator Status	Origin[1]
>50%	CHENOPODIACEAE	*Atriplex triangularis*	FACW	N
<20%	ASTERACEAE	*Conyza canadensis*	FAC	N
	ASTERACEAE	*Picris echioides*	FAC	E
	ASTERACEAE	*Bidens frondosa*	FACW	N
	ASTERACEAE	*Gnaphalium luteo-album*	FACW-	E
	ASTERACEAE	*Euthamia occidentalis*	OBL	N
	ASTERACEAE	*Xanthium strumarium*	FAC+	E
	ASTERACEAE	*Aster subulatus var. ligulatus*	FACW	N
	BRASSICACEAE	*Lepidium latifolium*	FACW	I
	CYPERACEAE	*Scirpus californicus*	OBL	N
	CYPERACEAE	*Scirpus robustus*	OBL	N
	FABACEAE	*Melilotus alba*	FACU+	E
	ONAGRACEAE	*Epilobium ciliatum ssp. cilatum*	FACW	N
	PLANTAGINACEAE	*Plantago major*	FACW-	E
	POACEAE	*Paspalum dilatatum*	FAC	E
	POACEAE	*Leersia oryzoides*	OBL	N
	POLYGONACEAE	*Polygonum amphibium var. emersum*	OBL	N
	POLYGONACEAE	*Rumex crispus*	FACW-	E
	POLYGONACEAE	*Polygonum lapathifolium*	OBL	N
	POLYGONACEAE	*Polygonum persicaria*	FACW	E
	POLYGONACEAE	*Polygonum punctatum*	OBL	N
	POLYGONACEAE	*Rumex salicifolius var. transitorius*	OBL	N
	SALICACEAE	*Salix lasiolepis*	FACW	N
	SOLANACEAE	*Solanum sp.*	NOL	E
	TYPHACEAE	*Typha angustifolia*	OBL	N
	TYPHACEAE	*Typha latifolia*	OBL	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 99

SCVWD Wetland Assessment Checklist

Facility Name: Guadalupe River
Location: 1400 ft to 750 ft u/s Tasman Dr

Survey Start Date: 10/16/00
Survey End Date: 10/16/00

Survey Chronology:
Site Type: RS, General Reference Site
Tidal or Nontidal: Tidal
If nontidal, is water in channel?:

Investigator: Janell Hillman
Station # Start: 31800
Station # End: 32550

Map or Photo Used: not applicable
Acreage Estimates Made From: Aerial Photo
Photo Documentation: Digital
Photo Code: Gale's digital camera

Vegetation Type: Vegetation Type 2 of 2

Dominance (>50% Relative Cover): Tidal: California bulrush

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	76-100%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

Vegetation Type 2 of 2 was dominated by Scirpus californicus (>50% relative cover). Typha angustifolia was sub-dominant (20-50% relative cover). This type occurred along the bank margins at the edge of the low flow channel; thickly along the right bank for a width of roughly 25 ft and sporadically along the left bank. The Scirpus grew right at the water's edge, while the Typha occurred slightly higher up on the bench. Total cover was very thick and few other species were found in the understory except Polygonum amphibium, which was abundant in some places. Native species relative cover was within the 76-100% category.

Estimated Wetland Amount: 0.68 ac

Code: 99

SCVWD Wetlands Plant List

Facility Name: Guadalupe River
Location: 1400 ft to 750 ft u/s Tasman Dr
Survey Start Date: 10/16/00
Investigator: Janell Hillman

Survey Chronology:
Site Type: RS, General Reference Site
Vegetation Type: Vegetation Type 2 of 2

Relative Cover	Family	Species	Wetland Indicator Status	Origin [1]
>50%	CYPERACEAE	*Scirpus californicus*	OBL	N
=20-50%	TYPHACEAE	*Typha angustifolia*	OBL	N
<20%	CHENOPODIACEAE	*Atriplex triangularis*	FACW	N
	POLYGONACEAE	*Polygonum amphibium var. emersum*	OBL	N
	POLYGONACEAE	*Polygonum punctatum*	OBL	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 99

SCVWD Wetland Assessment Checklist

Facility Name: San Francisquito Creek
Location: 300 ft d/s Hwy 101; length 100 ft

Survey Start Date: 9/5/00
Survey End Date: 9/5/00

Survey Chronology:
Site Type: RS, General Reference Site
Tidal or Nontidal: Tidal
If nontidal, is water in channel?:

Investigator: Janell Hillman
Station # Start: 7300
Station # End: 7400

Map or Photo Used: not applicable
Acreage Estimates Made From: Field Measure
Photo Documentation: Digital
Photo Code: 6J

Vegetation Type: Vegetation Type 1 of 2

Dominance (>50% Relative Cover): Tidal: other native

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	51-75%
Invasive Species Relative % Cover:	6-25%

Vegetation Description:

This vegetation type occurred along the west bank of the study site. It was dominated by Grindelia stricta (>50% relative cover), with Salicornia virginica var. angustifolia occurring as a subdominant (20-50% relative cover) and Spartina foliosa common (but less than 20% cover). The invasive Lepidium latifolium was present at the downstream end of the site.

Estimated Wetland Amount: 952 sq. ft. (0.02 ac)

Code: 66

SCVWD Wetlands Plant List

Facility Name: San Francisquito Creek
Location: 300 ft d/s Hwy 101; length 100 ft
Survey Start Date: 9/5/00
Investigator: Janell Hillman

Survey Chronology:
Site Type: RS, General Reference Site
Vegetation Type: Vegetation Type 1 of 2

Relative Cover	Family	Species	Wetland Indicator Status	Origin[1]
>50%	ASTERACEAE	*Grindelia stricta*	FACW	N
=20-50%	CHENOPODIACEAE	*Salicornia virginica*	OBL	N
<20%	APIACEAE	*Foeniculum vulgare*	FACU	E
	ASTERACEAE	*Xanthium strumarium*	FAC+	E
	BRASSICACEAE	*Lepidium latifolium*	FACW	I
	CYPERACEAE	*Scirpus maritimus*	OBL	N
	POACEAE	*Spartina foliosa*	OBL	N
	POACEAE	*Polypogon monspeliensis*	FACW+	E
	POACEAE	*Agrostis viridis*	OBL	E

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 66

SCVWD Wetland Assessment Checklist

Facility Name: San Francisquito Creek
Location: 300 ft d/s Hwy 101; length 100 ft

Survey Start Date: 9/5/00
Survey End Date: 9/5/00

Survey Chronology:
Site Type: RS, General Reference Site
Tidal or Nontidal: Tidal
If nontidal, is water in channel?:

Investigator: Janell Hillman
Station # Start: 7300
Station # End: 7400

Map or Photo Used: not applicable
Acreage Estimates Made From: Field Measure
Photo Documentation: Digital
Photo Code: 6J

Vegetation Type: Vegetation Type 2 of 2

Dominance (>50% Relative Cover): Tidal: other native

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	76-100%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

Vegetation Type 2 of 2 occurred on a low bar in the channel and adjacent to the east bank. It was dominated overwhelmingly by Atriplex triangularis, which was present at more or less 100% relative cover. Total cover was about 90%. The bar is innundated at high tide, as evidenced by drift lines and a sediment stain on the vegetation. Soil was saturated clay.

In the previous year's survey, this bar was much higher in elevation and contained a very different vegetation association. Soil was not saturated and vegetation was much weedier, without hydric species; therefore it was not identified as wetland.

Estimated Wetland Amount: 3500 sq. ft. (0.08 ac)

Code: 66

SCVWD Wetlands Plant List

Facility Name: San Francisquito Creek
Location: 300 ft d/s Hwy 101; length 100 ft
Survey Start Date: 9/5/00
Investigator: Janell Hillman

Survey Chronology:
Site Type: RS, General Reference Site
Vegetation Type: Vegetation Type 2 of 2

Relative Cover	Family	Species	Wetland Indicator Status	Origin[1]
>50%	CHENOPODIACEAE	*Atriplex triangularis*	FACW	N
<20%	ASTERACEAE	*Cotula coronopifolia*	FACW+	E
	POLYGONACEAE	*Rumex crispus*	FACW-	E

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 66

SCVWD Wetland Assessment Checklist

Facility Name: Stevens Creek **Survey Start Date:** 8/21/00
Location: 110 ft u/s and d/s of 1st power tower u/s of Crittendon pedestrian bridge; leng **Survey End Date:** 8/21/00

Survey Chronology: **Investigator:** Janell Hillman
Site Type: RS, General Reference Site **Station # Start:** 9000
Tidal or Nontidal: Tidal **Station # End:** 9220
If nontidal, is water in channel?:

Map or Photo Used: not applicable
Acreage Estimates Made From: Field Measure
Photo Documentation: Digital
Photo Code: 5J

Dominance (>50% Relative Cover): Tidal: non-native

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	26-50%
Invasive Species Relative % Cover:	6-25%

Vegetation Description:

As last year, wetland is restricted almost entirely to the east channel. The west channel consists of steep banks with no substrate for wetland vegetation establishment except for one small patch of Polygonum punctatum at the toe of one of the banks. Both channels are mud-bottomed and are devoid of vegetation in the bed. A thin wetland fringe exists in the east channel along the banks at the upstream end of the sample site. It is dominated by a mixture of nonnatives such as Agrostis viridis (20-50% relative cover; forming a thick understory at the edge of the east bank of the east channel) and Cynodon dactylon, with some Lepidium latifolium (6-25% relative cover). Scirpus robustus and Scirpus californicus were sub-dominant (20-50% relative cover combined). Total vegetative cover was between 76-100%. Native species relative cover was in the 26-50% category.

The banks above the channel and the upland island which separates the east from the west channel were dominated overwhelmingly by the invasive Lepidium latifolium.

Estimated Wetland Amount: 371 sq. ft.

Code: 64

SCVWD Wetlands Plant List

Facility Name: Stevens Creek **Survey Start Date:** 8/21/00
Location: 110 ft u/s and d/s of 1st power tower u/s of Crittendon pedestrian bridg **Investigator:** Janell Hillman

Survey Chronology:
Site Type: RS, General Reference Site

Relative Cover	Family	Species	Wetland Indicator Status	Origin[1]
=20-50%	CYPERACEAE	*Scirpus californicus*	OBL	N
	POACEAE	*Agrostis viridis*	OBL	E
<20%	BRASSICACEAE	*Lepidium latifolium*	FACW	I
	CYPERACEAE	*Cyperus involucratus*	OBL	E
	CYPERACEAE	*Scirpus robustus*	OBL	N
	ONAGRACEAE	*Epilobium ciliatum ssp. cilatum*	FACW	N
	POACEAE	*Cynodon dactylon*	FAC	E
	SALICACEAE	*Salix lasiolepis*	FACW	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 64

SCVWD Wetland Assessment Checklist

Facility Name: Sunnyvale West Channel
Location: 250 ft u/s Caribbean Dr; length 440 ft

Survey Start Date: 11/2/00
Survey End Date: 11/2/00

Survey Chronology:
Site Type: RS, General Reference Site
Tidal or Nontidal: Tidal
If nontidal, is water in channel?:

Investigator: Janell Hillman
Station # Start: 5800
Station # End: 6240

Map or Photo Used: not applicable
Acreage Estimates Made From: Field Measure
Photo Documentation: Digital
Photo Code: 18 J

Dominance (>50% Relative Cover): Tidal: other native

Vegetation Quality Indicators:

Total % Cover:	76-100%
Native Species Relative % Cover:	51-75%
Invasive Species Relative % Cover:	5% or less

Vegetation Description:

This section of Sunnyvale West contained a well-developed wetland fringe (roughly 10 ft wide) along the right bank, which formed a low, sloped bench above the channel bed. The left bank was much steeper and exhibited a thinner, patchier wetland fringe about six feet wide. The channel bed was unvegetated with a mud bottom.

The dominant species was Polygonum punctatum (>50% relative cover). There were occasional patches of Scirpus californicus along the bank margins. Total cover was fairly thick overall, but patchier right at the water's edge. Native species relative cover was high (within the 51-75% category).

In contrast to the previous year, there was no evidence of the site having been mown. Vegetation was thick, and resulted in greater cover values this year. Also, there is more Scirpus in the channel.

Estimated Wetland Amount: 6680 sq. ft.; 0.15 ac

Code: 106

SCVWD Wetlands Plant List

Facility Name: Sunnyvale West Channel
Location: 250 ft u/s Caribbean Dr; length 440 ft
Survey Start Date: 11/2/00
Investigator: Janell Hillman

Survey Chronology:
Site Type: RS, General Reference Site

Relative Cover	Family	Species	Wetland Indicator Status	Origin[1]
>50%	POLYGONACEAE	*Polygonum punctatum*	OBL	N
<20%	CYPERACEAE	*Scirpus californicus*	OBL	N
	CYPERACEAE	*Cyperus eragrostis*	FACW	N
	ONAGRACEAE	*Epilobium ciliatum ssp. cilatum*	FACW	N
	POLYGONACEAE	*Rumex crispus*	FACW-	E
	POLYGONACEAE	*Rumex salicifolius var. transitorius*	OBL	N

[1] N = Native, E = Exotic, I = Invasive Exotic, UNK=Unknown Origin

Code: 106

APPENDIX E
1997 Excavation and Adjacent Reference Site Photographs

Figure 1. Jones Creek 1997 Excavation Study Site. View d/s from small footbridge at u/s end of site near Hwy. 152. A large willow sapling has grown up and completely blocks the original photo point at the d/s end of the sample site. September 2000.

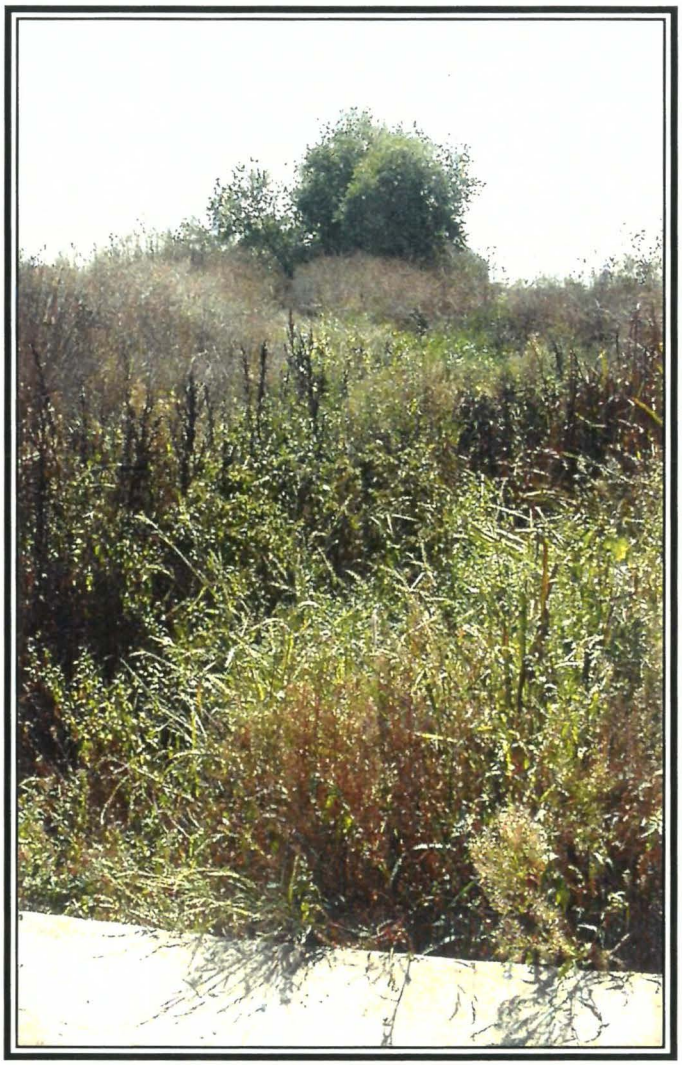

Figure 2. Jones Creek Adjacent Reference Site. View d/s from the u/s end of the site near concrete weir. September 2000.

3a. View looking d/s. The weedy, cobbled bar above the low flow channel is barely visible in the photo. In 2000, most of the bar did not support wetland.

Figure 3. Los Coches Creek 1997 Excavation Study Site. September 2000.

3b. Native vegetation type in the low flow channel.

Figure 3. Continued.

Figure 4. Lower Penitencia Creek 1997 Excavation (left channel) and Adjacent Reference Sites (right channel). View from Milmont Dr. d/s. October 2000.

5a. View downstream from Santa Theresa Blvd. There is a much higher abundance of willow herb (*Epilobium ciliatum*) than last year; the channel is filling in with greater percent cover.

5b. View downstream from mid-site. Wetland changes from almost toe-to-toe to a thin, sparse fringe along either bank.

Figure 5. North Morey Channel 1997 Excavation Site. September 2000.

Figure 6. North Morey Adjacent Reference Site (Lions Creek). View d/s. Site is dominated by cattails, with some mixed nut sedge and water primrose. September 2000.

7a. Third year post-project view d/s from Old Mountain View-Alviso Rd. towards Hwy. 237.

7b. Third year post-project view d/s Great America toward Old Mountain View-Alviso Rd. Note the expansion of the fringing patches of water primrose.

Figure 7. San Tomas Creek (tidal) u/s Hwy. 237: 1997 Excavation Site. September 2000.

Figure 8. San Tomas (tidal) d/s Hwy. 237 Adjacent Reference Site. View d/s from pedestrian bridge near Hwy. 237. California bulrush fringes the edges of the open channel while cattails dominate the wide benches. September 2000.

Figure 9. San Tomas Creek (nontidal) u/s of Central Expwy 1997 Excavation Study Site. View looking u/s. September 2000.

Figure 10. Saratoga Creek 1997 Excavation Site: third year post-project. View d/s from Cabrillo Ave. Wetland exists toe-to-toe, with water primrose and watercress dominating the low-flow channel; and a more exotic wetland (composed of knot weed and cocklebur) along the banks. Cattails were almost completely absent in 2000. September 2000.

Figure 11. Saratoga Creek Adjacent Reference Site. View u/s from Warburton Ave. September 2000.

Figure 12a. View d/s from mid-site over fully-excavated portion of the channel.

Figure 12b. View u/s from mid-site over fully-excavated section. Note incoming willows at far end of site, and thick cattails in the foreground.

Figure 12. South Morey Channel 1997 Excavation Site. September 2000.

Figure 12c. View d/s from below mid-site. Water primrose-dominated vegetation carpets the channel until cattails come in thickly once again, this time in the portion of the channel which was only half-excavated.

Figure 12. Continued.

APPENDIX F
1998 Excavation and Adjacent Reference Site Photographs

1a. View u/s Milpitas Blvd.

1b. View d/s Milpitas Blvd.

Figure 1. Berryessa Creek u/s Lower Penitencia Creek: 1998 Excavation Sites. Post-second project. Other native-dominated wetlands carpet the low flow channel, while higher benches support non-native wetlands. October 2000.

Figure 2. Berryessa Creek from Calaveras Blvd to Los Coches Ave. Adjacent Reference Site. Other native-dominated wetland forms fringing patches in the low flow channel, while higher benches support a more mixed exotic wetland. October 2000.

3a.. View u/s from Montague Expwy.

3b. View u/s towards bend.

Figure 3. Berryessa Creek u/s of Montague Expwy: 1998 Excavation Site. June 2000. Most wetalnd occurred as a thin, sporadic fringe along the banks or on low, moist gravel bars.

Figure 4. Berryessa Creek d/s Montague Expwy: Adjacent Reference Site. October 2000. View d/s from railroad bridge towards 2nd railroad bridge.

5a. View d/s from Tasman Road. Excavation Site: right bank in photo; Reference Site: left bank in photo. Note Ludwigia (water primrose) fringing in channel.

5b. View u/s from Great America Parkway. Excavation Site: right bank in photo; Reference Site: left bank in photo. Note proximity of in-stream bulrush to wetland fringing out from left bank.

Figure 5. San Tomas (tidal) u/s Great America Parkway: 1998 Excavation and Reference Sites. Second year post-project. August 2000.

6a. View d/s from Hwy. 237 frontage road. Excavation Site: right bank in photo; Reference Site: left bank. Note developing wetland fringe along right bank.

6b. View from mid-site d/s towards Caribbean Dr. Excavation Site: right bank in photo; Reference Site: left bank. Note wetland on left bank.

Figure 6. Sunnyvale East 1998 Excavation and Adjacent Reference Site: second year post-project. September 2000.

APPENDIX G
General Reference Site Photographs

Figure 1. Berryessa Creek General Reference Site (STA 109+86-112+00). View looking downstream. October 2000.

Figure 2a. View looking downstream.

Figure 2b. Detail of dry channel bottom.

Figure 2. East Little Llagas Creek General Reference Site (STA 45+00-47+20). October 2000.

Figure 3. Fisher Creek General Reference Site (STA 149+00-150+00). View looking downstream. September 2000.

Figure 4. Greystone Creek General Reference Site (STA 11+00-13+10). View looking downstream towards Camden Ave. October 2000.

Figure 5. Lower Silver Creek General Reference Site (STA 373+95-375+00). View upstream. October 2000. Note dying cattails in channel; most likely sprayed in 1999.

Figure 6. Norwood Creek General Reference Site (STA 7+80-11+00). From confluence of Norwood and Lower Silver Creek looking upstream towards reference site. A sparse wetland fringe of nutsedge (Cyperus eragrostis) was present along the left and portions of the right bank. Debris in channel is from drainage problems at the confluence with Lower Silver Creek. October 2000.

Figure 7a. View looking upstream.

Figure 7b. A thin wetland fringe grew along the banks several feet above the low flow channel.

Figure 7. Smith Creek General Reference Site (STA 8+80-10+00). October 2000.

Figure 8a. View looking downstream from Pacheco Dr. footbridge. Note thick cattails in channel. October 2000.

Figure 8b. View looking upstream over two habitat types: cattails (tall in foreground and far background) and water primrose (low-growing in center of photo).

Figure 8. Tularcitos Creek General Reference Site (STA 9+00-12+80). October 2000.

Figure 9a. View upstream from mid-site.

Figure 9b. View upstream from downstream end of site at Cosmo Ave.

Figure 9. West Little Llagas Creek upstream Cosmo Ave. General Reference Site (STA 100+00-101+00). September 2000.

Figure 9c. View looking downstream toward Cosmo Ave. from upstream end of sample site.

Figure 9. Continued.

Figure 10. West Little Llagas Creek downstream Main Ave. General Reference Site (STA 152+00-152+80). September 2000.

Figure 11a. View over site from right bank looking d/s.

Figure 11b. View across site from right bank. Reddish vegetation covering most of the site is spearscale (*Atriplex triangularis*). Note small stand of cattails in foreground right of picture (in previous years dominating the site), and bulrush lining the low flow channel in the background.

Figure 11. Guadalupe River General Reference Site (STA 318+00-325+50). October 2000.

Figure 12a. View of west bank at downstream end of sample site. Note the yellow-flowered gum plant (*Grindelia stricta*) lining the banks.

Figure 12b. View from east bank overlooking low bar vegetated with spearscale (*Atriplex triangularis*).

Figure 12. San Francisquito Creek General Reference Site (STA 73+00-74+00). September 2000.

Figure 13. Stevens Creek General Reference Site (STA 90+00-92+20). View upstream towards site from Crittenden footbridge. Note invasive peppergrass (*Lepidium latifolium*) on banks. August 2000.

Figure 14. Sunnyvale West General Reference Site (STA 58+00-62+40). View downstream towards Caribbean Ave. There is a wetland fringe along both banks, which is more developed along the right bank. November 2000.

APPENDIX H
Recent Excavation History of Study Sites

Appendix H. Most Recent Excavation of Study Sites

STREAM	HALF CHANNEL EXCAVATION [1]	DATE OF LAST SEDIMENT REMOVAL PROJECT [2]
EXCAVATION STUDY SITES		
1997		
Jones		No Maintenance Record [3]
Lower Penitencia	X	1990
Los Coches		1991
North Morey		No Maintenance Record [4]
South Morey		No Maintenance Record [4]
San Tomas (tidal) u/s Highway 237	X	1991
San Tomas (nontidal) u/s of Central Expressway		1991
Saratoga		1993
1998		
Berryessa u/s Lower Penitencia	X	1989, 1991, 1993
Berryessa u/s Montague Expressway		1984, 1987
San Tomas (tidal) u/s Great America Parkway	X	1988
Sunnyvale East		1986
ADJACENT REFERENCE SITES		
Berryessa d/s Los Coches Avenue		1984, 1989
Jones		No Maintenance Record [3]
Lower Penitencia	X	1990
Lions		No Maintenance Record [4]
South Morey		No Maintenance Record [4]
San Tomas (tidal) d/s Highway 237	X	1988
Saratoga		1988
Berryessa d/s Montague Expressway		1988
San Tomas (tidal) u/s Great America Parkway	X	1988
Sunnyvale East		1986
GENERAL REFERENCE SITES		
Nontidal		
Berryessa u/s Los Coches Avenue		1988
East Little Llagas		No Maintenance Record [5]
Fisher		1986
Greystone		1988
Tularcitos		1984
Lower Silver		1982
Norwood		1986
Smith		1986
West Little Llagas u/s Cosmo Avenue		1988
West Little Llagas d/s Main Avenue		1984
Tidal		
Guadalupe River	X	1990
San Francisquito		1993
Stevens	X	1986
Sunnyvale West		1981

[1] Per CDFG MOU on these sites, only one side of the channel can be excavated in any one year.

[2] Some sediment removal projects only affected a portion of the total site.
In these cases, all the most recent projects which collectively include the entire length of the site are listed.

[3] Maintained farmers ditch, no construction date

[4] Built in 1988 by NRCS

[5] Built 20-30 Years Ago by State Highway Department

APPENDIX I
Routine Vegetation Management on Study Sites

Appendix I. Routine Vegetation Management on Study Sites

Study Site	Planned Routine Vegetation Control Activity	Planned Routine schedule	Work done since 1997
1997 EXCAVATION STUDY SITES			
Jones	NO WORK	no work	same as planned
Lower Penitencia	AQUATIC HERBICIDE APPLICATION[1]	annual	same as planned
Los Coches	AQUATIC HERBICIDE APPLICATION	annual	same as planned
North Morey Channel	WOODY/AQUATIC VEG. REM. HAND LABOR-INSTREAM[2]	annual	same as planned
South Morey Channel	WOODY/AQUATIC VEG. REM. HAND LABOR-INSTREAM	annual	same as planned
San Tomas Aquino u/s Hwy. 237	AQUATIC HERBICIDE APPLICATION - WOODY ONLY [3]	annual	same as planned
San Tomas Aquino u/s Central Expwy	AQUATIC HERBICIDE APPLICATION - WOODY ONLY	annual	same as planned
Saratoga	AQUATIC HERBICIDE APPLICATION - WOODY ONLY	annual	cattails sprayed in 1999
1998 EXCAVATION STUDY SITES			
Berryessa u/s Lower Penitencia	AQUATIC HERBICIDE APPLICATION	annual	annual
Berryessa u/s Montague Expwy	AQUATIC HERBICIDE APPLICATION	annual	same as planned
San Tomas Aquino u/s G. America Pkwy	AQUATIC HERBICIDE APPLICATION -WOODY ONLY[3]	annual	same as planned
Sunnyvale East	AQUATIC HERBICIDE APPLICATION	annual	same as planned
ADJACENT REFERENCE SITES			
Berryessa d/s Los Coches Ave.	AQUATIC HERBICIDE APPLICATION	annual	same as planned
Jones	NO WORK	no work	same as planned
Lower Penitencia	AQUATIC HERBICIDE APPLICATION[1]	annual	same as planned
Lions	WOODY/AQUATIC VEG. REM. HAND LABOR-INSTREAM	annual	same as planned
South Morey	WOODY/AQUATIC VEG. REM. HAND LABOR-INSTREAM	annual	same as planned
San Tomas d/s Hwy 237	NO WORK	no work	same as planned
Saratoga	AQUATIC HERBICIDE APPLICATION -WOODY ONLY	annual	same as planned
Berryessa d/s Montague Expwy	AQUATIC HERBICIDE APPLICATION	annual	same as planned
San Tomas Aquino u/s Great America Pkwy	AQUATIC HERBICIDE APPLICATION -WOODY ONLY[3]	annual	same as planned
Sunnyvale East	AQUATIC HERBICIDE APPLICATION	annual	same as planned

Appendix I. Continued.

Study Site	Planned Routine Vegetation Control Activity	Planned Routine schedule	Work done since 1997
GENERAL REFERENCE SITES			
Nontidal Sites			
Berryessa	AQUATIC HERBICIDE APPLICATION	annual	same as planned
East Little Llagas	NO WORK	no work	same as planned
Fisher	WOODY/AQUATIC VEG. REM. HAND LABOR-INSTREAM	not performed recently	no work
Greystone	AQUATIC HERBICIDE APPLICATION	annual	same as planned
Tularcitos	AQUATIC HERBICIDE APPLICATION	annual	same as planned
Lower Silver	AQUATIC HERBICIDE APPLICATION	annual	same as planned
Norwood	AQUATIC HERBICIDE APPLICATION	annual	same as planned
Smith	AQUATIC HERBICIDE APPLICATION	annual	same as planned
West Little Llagas u/s Cosmo St.	WOODY/AQUATIC VEG. REM. HAND LABOR-INSTREAM	annual	same as planned
West Little Llagas d/s Main St.	WOODY/AQUATIC VEG. REM. HAND LABOR-INSTREAM	annual	same as planned
Tidal Sites			
Guadalupe River	AQUATIC HERIBCIDE APPLICATION-WOODY ONLY	annual	same as planned
San Francisquito	AQUATIC HERIBCIDE APPLICATION-WOODY ONLY	not performed recently	no work
Stevens	AQUATIC HERBICIDE APPLICATION	annual	same as planned
Sunnyvale West	AQUATIC HERBICIDE APPLICATION	annual	same as planned

1 - Aquatic herbicide application includes both herbaceous and woody plants

2 - Sites receiving "aquatic heribicide - woody only" treatment also have woody vegetation hand removal every two years

3 - On this site includes only removal of non-natives such as pampas grass and woody non-natives